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From the Editorial Board

The editorial board during the formation of the eighteenth issue of the collection of scientific papers *Theory and Practice of Forensic Science and Criminalistics* adhered to the traditional editorial rubricating. It provided materials on the coverage of modern criminalistics problems, general issues solving of Forensic Science Theory, organization and legal regulation of forensic expert activity, as well as sections formed from works revealing theoretical and practical problems according to separate classes, kinds, types and subtypes of forensic examinations. Issues of expert practice are highlighted in the relevant subsections of main sections. Representatives of forensic institutions, higher education institutions, law enforcement agencies not only from Ukraine, but also foreign countries took part in the preparation of articles for this collection. The collection contains information on international conferences on problems of Forensic Science and Criminalistics that took place in Minsk (Republic of Belarus), Almaty (Republic of Kazakhstan), Chisinau (Republic of Moldova), Odesa and Kharkiv (Ukraine), etc. The scientific paper collection *Theory and Practice of Forensic Science and Criminalistics* is included in the international scientometric database Index Copernicus and the index 64 of 100 is assigned.

We express our sincere gratitude to all the authors who provided materials for publication in the collection, as well as to the specialists who took part in its publication, and invite scientists and practitioners to prepare articles for the next issue.

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CRIMINALISTICS AS A SYSTEM OF SCIENTIFIC KNOWLEDGE IN CONDITIONS OF GLOBAL THREATS AND CRIME TRANSFORMATION

Functional purpose of forensic knowledge in conditions of global threats and significant change of crime is considered. In new conditions of society development, criminalistics is called to develop the latest means of counteracting crime. Separate direction in criminalistics should be the protection of information sources and information security issues. The role in the application of forensic knowledge towards counteracting information challenges and informational (hybrid) war is highlighted.

Keywords: Criminalistics, forensic knowledge, forensic means, criminalistics tasks, paradigm of criminalistics, global threats, globalization of crime, information, information warfare, counteraction to crime.

Any science is a certain system or branch of human knowledge. Generally, science is a special kind of cognitive activity, aimed at developing objective, systematically organized and substantiated knowledge about the world[1]. Therefore, criminalistics as a science is a system of forensic knowledge about certain objective laws. In this sense, it is rightly emphasized that forensic knowledge has its own structure consisting of separate elements and parts related to each other on the basis of certain principles and laws[2].

Change in the paradigm of criminalistics affects the system of forensic knowledge. In our opinion, we should agree with the position of

[1] *Entsyklopedyia epystymolohyy y fylosofyy nauky* (2009) [Encyclopedia of epistemology and philosophy of science]. Moscow : «Kanon+» ROOI «reabilittsia», P. 560 [in Russian].

[2] Klimenko N. I. (1990) *Krymynalystycheskye znanyia v strukture professyonalnoi podhotovky sledovatelia : ucheb. posobye.* [Forensic knowledge in the structure of investigator professional training : tutorial]. Kiev : Vyshcha Shkola, p. 5 [in Ukrainian].

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M. K. Kaminsky and support his idea that knowledge as a socio-cultural product does not belong and cannot belong to one particular person; they are always based on continuity with other knowledge that they are moving in the flow of activity, transmitted by the method of peculiar social relay [...]. It may be argued that the form of knowledge existence is a stratified package of action norms (programs)[1].

Historically, the process of criminalistics forming was associated with borrowing data from other sciences (natural, technical, humanitarian, etc.) to solve problems of counteraction to crime. In this regard, there is a debate about the relation between forensic and specialist knowledge. At the same time, it is possible to conclude that the division of knowledge into special and forensic is conditional.

In modern conditions of civilization development, presence of global threats to the world community, transformation of the criminal world is changing approaches to the means of neutralizing negative trends, the use of advanced achievements of science and technology. Objective processes in society and in all its spheres (integration, urbanization, technology, unification, informatization, automation, etc.) are global in nature. Global changes take place in the criminal environment; crime is transformed, integrated, becomes transnational.

Emergence of a system of forensic knowledge associated with counteraction to crime. In modern conditions, criminalistics is called upon to develop the latest means aimed at counteracting organized and transnational crime, corruption, trafficking in human beings, illicit drug trafficking, terrorist financing, and other criminal acts. A separate direction in criminalistics should be the protection of information sources and information security issues.

In the context of global threats and the transformation of criminal manifestations, an important role should be given to the use of modern forensic knowledge. Means of Criminalistics should meet the information challenges, successfully counteract crime in an information (hybrid) war.

At the beginning of the XXI century. The toolkit of the criminal world is the informational (psychological) influence on certain strata of the population. Achievement of strategic goals (military, political, economic) of certain criminals (their leaders) is achieved through information war (the information war) — a process of suggestive influence on groups of people with the help of specially prepared communication technologies and information materials.

Today, the term *information war* is increasingly used in everyday and scientific circles. As for the understanding of *information war*, we should distinguish between broad and narrow approaches. Generally, information warfare is any negative information impact on the enemy; narrowly it is a new

[1] Kaminsky M. K. (2011) *Special'nye znanija — sila?* Expertise is power? *Kriminalist pershodrukovanyi*. № 3, p. 69 [in Russian].

one that does not fit into the international legal qualification, kind or method of armed conflicts[1].

Phenomenon of crime is a reflection of the civilization crisis, the reverse side of positive geopolitical realities. Criminality accompanies global problems of society in the field of economy, politics, ecology, provision of resources and food, energy, demography, etc. In modern society, criminality is transnational in nature, embraces business and politics, goes beyond the boundaries of individual countries, is rooted in the state apparatus or acts on behalf of state structures.

Recently, in the context of conducting a hybrid and information war, the annexation of the Crimea, the use of the term "offender state", is often used in the conduct of hostilities in the East of Ukraine[2] and Syria. In the legal sense, criminals are referred to as individuals, individuals who commit criminal acts. In the same case, the use of the term "State-offender", emphasizes the deep penetration of criminal elements at the level of public administration, the state apparatus, and the activities of civil servants on behalf of the state.

In the modern world, the terms «information society», "information influence", "information technologies", are increasingly used. These terms are widespread in connection with the need for the exchange of information between people and the processes of information society. Currently, the process of information exchange is accelerating, attempts are being made to influence other people through information. Information psychological impact is a kind of psychological impact that is defined as a way of influencing people (on individual individuals and groups).

In modern society at different levels attention is paid to the protection of information, information security or cybersecurity. The testimony of the importance of measures for state information security, counteraction to cyber-attacks is the adoption of the Law *On the Basic Principles of Cybersecurity Protection of Ukraine* (from 10.10.2017, № 2163–VIII).

Any crime investigation or trial is "a fight for information." The lack of information (lack of evidence or their falsity) complicates the process of establishing the fact of the offender, the perpetrators, the motives of the crime, etc. Thus, the passenger aircraft of the Malaysian Airlines Boeing 777 was down June 17, 2014. (near Donetsk), the anti-aircraft rocket complex *Buk*, resulting in the death of 298 people. The aircraft performed a regular MH 17 flight from Amsterdam (the Netherlands) to Kuala Lumpur. The grouping of the DPR made statements that shot down the plane, but then abandoned their

[1] Korotky G. R. Koval D. A. (2010) *Ponjatie informacionnoj vojny v mezhdunarodnom prave*. Concept of information war in international law. *Al'manah mezhdunarodnogo prava*. Almanac of international law. Issue 2, p. 332 [in Russian]. URL: http://nbuv.gov.ua/UJRN/amp_2010_2_29 (Date accessed: 09.04.2018).

[2] International criminal court` report on preliminary examination activities (2016). *Kriminalist pershodrukovanyi.* № 13, p. 125–135 [in Ukrainian].

allegations. The Ukrainian side reported having evidence of involvement in this plane crash in Russia. Russia side denies such allegations[1]. In such circumstances, it becomes important to obtain evidence in relation to the crime committed, the use of forensic and other specialist knowledge.

The task of criminalistics is to develop and use tools that allow the collection, exploration, and use of evidentiary information. A vivid example in the history of forensics in gathering evidence in difficult circumstances of armed conflict is the work of Professor R. A. Reiss, who arrived in Serbia in 1914 at the invitation of her government as an expert to investigate the crimes of the Hungarian, German and Bulgarian armies in the First World War. In 1916, R. A. Reiss published "Report on the Atrocities committed by the Austro-Hungarian army during the First invasion of Serbia" (London, 1916). In 1918 another part of his work, devoted to the events of the First World War, was printed, «Les infractions aux lois et conventions de la guerre commises par les enemies de la Serbie depuis la retraite Serbe de 1915. Resume de l'enquete execute sur le front de Macedoine» (Paris, 1918). Both papers represented a forensic research on the facts that took place during the First World War, in the form of peculiar reports or conclusions, which were illustrated by photographs, witness testimony and forensic researches[2]. This content was used to condemn the crimes committed during the First World War. The practice of using forensic knowledge to gather evidence in global armed conflicts (warfare, including hybrid) is relevant in today's world.

Extension of the criminalistics subject, change in the system of forensic knowledge affect those tasks that forensic science should resolve. Criminological problems are solved with the object being investigated and its transformation. At the present stage of development of society, crime, its manifestations and types have changed significantly; crime becomes globalized and transnational. Today, the problem of Criminalistics can be divided depending on the theoretical and cognitive (development of the theory of criminology) and applied problems (scientific developments for the practice of law enforcement). The tasks of criminalistics should be differentiated into two levels: 1) tasks aimed at improving the theory of Criminalistics; 2) tasks aimed at improving law enforcement practice.

Important tasks of Criminalistics in modern conditions are: a) formalization of forensic knowledge; b) unification of forensic recommendations concerning pragmatic goals; c) the implementation of actual requests for practice and the prompt implementation of the innovations proposed by science. Topical tasks of criminalistics should include: interpenetration of Criminalistics and practice of law enforcement agencies; introduction of innovations in practical law enforcement activities; development of the latest "product", of criminology for practice; unification

[1] Za materialamy zasobiv masovoi informatsii [According to the media].

[2] Shepitko M. V. (2015) *Rudolf Archybald Reis.* [Rudolphe Archibald Reiss]. *Kriminalist pershodrukovanyi*. № 10, p. 111, 112 [in Ukrainian].

of scientific forensic recommendations and their adaptation to the practice of application; creation of joint scientific and practical teams for the development of effective forensic recommendations[1].

The tasks of criminalistics are connected with its security function. In this sense, significant changes have taken place, based on new mechanisms for conducting investigative and judicial activity, the introduction of a competitive procedure for obtaining and verifying evidence. The need to provide the parties to the criminal proceedings (the prosecution and the defense) with forensic methods, methods and means allows to put forward the assumptions about the formation and formation of so-called adversarial criminalistics, which differs significantly from criminology, which served only for the bodies of pre-trial investigation.

The tasks of Criminalistics can also be divided depending on the strategic and tactical directions. The strategic task of criminalistics should be not only the fight against crime, but also the restoration of justice through the use of forensic (special) knowledge by various subjects of the jurisdictional process. Therefore, we can talk about the expediency of using forensic knowledge not only in criminal proceedings. Forensic knowledge can be successfully used in civil, economic, administrative and other processes.

КРИМІНАЛІСТИКА ЯК СИСТЕМА НАУКОВИХ ЗНАНЬ В УМОВАХ ГЛОБАЛЬНИХ ЗАГРОЗ І ТРАНСФОРМАЦІЇ ЗЛОЧИННОСТІ

В. Ю. Шепітько

Розглянуто функціональне призначення криміналістичних знань в умовах глобальних загроз і суттєвого змінення злочинності. У нових умовах розвитку суспільства криміналістика покликана розроблювати новітні засоби протидії злочинності. Окремим напрямом у криміналістиці має бути захист інформаційних джерел і проблеми інформаційної безпеки. Підкреслено роль у застосуванні криміналістичних знань щодо протидії інформаційним викликам та інформаційній (гібридній) війні.

Ключові слова: криміналістика, криміналістичні знання, криміналістичні засоби, завдання криміналістики, парадигма криміналістики, глобальні загрози, глобалізація злочинності, інформація, інформаційна війна, протидія злочинності.

КРИМИНАЛИСТИКА КАК СИСТЕМА НАУЧНЫХ ЗНАНИЙ В УСЛОВИЯХ ГЛОБАЛЬНЫХ УГРОЗ И ТРАНСФОРМАЦИИ ПРЕСТУПНОСТИ

В. Ю. Шепитько

Рассмотрено функциональное предназначение криминалистических знаний в условиях глобальных угроз и существенного изменения преступности. В новых условиях развития общества криминалистика призвана разрабатывать новейшие средства противодействия преступности. Отдельным направлением в

[1] *Pravova doktryna Ukrainy: u 5 t. T. 5: Kryminalno-pravovi nauky v Ukraini: stan, problemy ta shliakhy rozvytku* (2013) [Legal doctrine of Ukraine: 5 vol. V. 5. Criminal science in Ukraine: state, problems and ways of development] Tatsii V. Ya. I. Borisov, V. S. Batrygareyev and others. Ed. by V. Ya. Tatsii, I. Borysova. Kharkiv : Pravo, p. 866, 867 [in Ukrainian].

криміналістиці должны стать защита информационных источников и проблемы информационной безопасности. Подчеркнута роль применения криминалистических знаний в противодействии информационным вызовам и информационной (гибридной) войне. Процесс расследования преступлений и судебное разбирательство определяется как «борьба за информацию». Возможность получения объективной информации зависит от задействованных криминалистических средств. Средства криминалистики (приемы, методы, технологии, рекомендации) должны соответствовать информационным проявлениям, успешно противодействовать преступности. Аргументировано значение внедрения практики применения криминалистических знаний, новейших научно-технических и других средств собирания доказательственной информации в ходе глобальных вооруженных конфликтов. Обращено внимание на изменение задач, которые ставятся перед криминалистикой. Выдвинуто предположение о существовании задач криминалистики на следующих уровнях: стратегическом и тактическом; теоретико-познавательном и прагматическом (прикладном). Изменение задач криминалистики обусловлено не только трансформацией преступности, а и внедрением новых механизмов (европейских стандартов) в практику правоприменения, необходимостью использования криминалистических знаний в различных юрисдикционных процессах.

Ключевые слова: криминалистика, криминалистические знания, криминалистические средства, задачи криминалистики, парадигма криминалистики, глобальные угрозы, глобализация преступности, информация, информационная война, противодействие преступности.

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SPECIFIC DOCTRINES IN THE STRUCTURE OF GENERAL THEORY OF CRIMINALISTICS

Conceptual approaches to formation and application of certain forensic studies (theories) as scientific constructions forming the structure basis of general theory of forensic science and determining development level of the theoretical and methodological basis of this science are considered. Author's understanding of the concept of "separate criminological doctrine (theory)", is presented and suggestions are made regarding the systematization of certain forensic students, their place in the structure of general theory of criminalistics. It is noted that the modern system of separate doctrines (theories) of criminalistics is dynamic and its improvement is conditioned by the needs of judicial and investigative practice; the development of related branches of knowledge, general theory and the most separate criminalistics

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doctrines, change of connections and dependencies between. Criteria for the separate criminalistic doctrine (theory) should be determined. Dissertation is devoted to the research issue, the ways of optimization of scientific developments in this field of knowledge are outlined.

Keywords: General theory of criminalistics, structure of general theory of forensic science, separate criminalistics doctrines (theories), systematization of certain forensic doctrines (theories).

Problem definition General theory of criminalistics as a system of its ideological principles, theoretical concepts, categories and concepts, methods and relations, definitions and terms serve as the methodological basis of criminalistics[1]. In the structure of general theory of criminalistics, main role plays certain forensic doctrines. In general, general theory of criminalistics can be regarded as a system of different levels of generalization and orientation of certain forensic students who collectively form the theoretical and methodological basis of this science.

Relevance of research topic. The development of conceptual approaches to the formation and application of certain forensic students (theories), the definition of their place in the structure of the general theory of criminology belongs to the most relevant contemporary areas of forensic research, which determine the state of the formation of its theoretical and methodological basis. The elaboration of established approaches to the systematization of certain forensic students, the definition of their place in the structure of the general theory of Criminalistics will contribute to the final formation of a modern scientific forensic paradigm.

Analysis of recent research and publications. A significant contribution to development of the basics of certain forensic doctrines (theories) was made by such scholars as R. S. Belkin. O. M. Vasiliev, I. Vinberg, O. Yu. Golovin, V. G. Goncharenko, O. O. Eisman, O. O. Exarchhopulo, G. O. Zorin, Z. I. Kirsanov, V. V. Klochkov, V. O. Konovalova, V. Ye. Kornoukhov, I. M. Luzgin, G. A. Matusovsky, S. P. Mitrichev, V. O. Obraztsov, M. O. Selivanov, V. G. Tanasevich B. M. Shaver, V. Yu. Shepitko, M. P. Yablokov, At the same time, in modern domestic forensic literature, there are practically no publications on the problems of the formation and implementation of certain forensic doctrines (theories), their definition, clarification of conceptual approaches to creation, in particular, regarding the identification of criteria and conditions transforming certain theoretical constructions into separate forensic doctrines.

[1] Belkin R. S. (1997) *Kurs krymynalystyky: v 3-kh t. T. 1: Obshchaia teoryia krymynalystyky* [Criminalistics course: Composed of 3 vol. vol. 1. General theory of Criminalistics]. Moscow : Yourist, p. 41 [in Russian].

Formation of purposes of the article. The article purpose is to find out the place of certain forensic students in the structure of the general theory of forensic science, to propose their distribution, depending on the degree of elaboration and generalization of the elements of the object of cognition displayed by them, scientific and practical significance.

Main content presentation. Axiomatic is the assertion that certain scientific theories investigate a certain circle of laws of objective reality among those who study criminalistics in general. Genetically, they can precede the general, and may, on the contrary, can be generated by[1]. To prolong this thought O. Exarchhopulo notes that in each separate criminalistics theory (doctrine), the regular connections of not all "abstract", " objects of the idealized model are revealed, but only some of them, which, in fact, allows us to speak about their diversity. The system of forensic theories reflects the subject of criminology in general and even more so, the more developed this system[2].

R. S. Belkin relying on the provisions of science in regard to the fact that any theory must meet the requirements of reasonableness (to make assumptions based on limited information, on fundamentally new facts or on the future state of studied objects), certainty (describe the results of experiments by the terms of this theory), validity (to establish rational connections between the separate provisions of the theory), consistency (internal and with the obtained experimental data)[3], distinguishing the following features of the general theory of criminalistics:

— theory only then can claim general values, if it extends to the whole subject of the study, refers to it as a whole, and not to one of its elements;

— concept or system of concepts that make up the content of the general theory, should relate not so much to the phenomena as to the essence of the subject of study and explain this essence;

— general theory, revealing the essence of the subject of the study must reveal what makes this entity permanent, patterns of relations or relations of phenomena, that is, the laws of those processes, the study of which is the purpose of this branch of scientific knowledge;

— general theory should be based on the principles of the theory of reflection, which matters the scientific outlook and reflect the "dialectic of things", as the basis of "the dialectics of the idea", and not vice versa;

[1] Belkin R. S. (1997) *Kurs krymynalystyky: v 3-kh t. T. 1: Obshchaia teoryia krymynalystyky* [Criminalistics course: Composed of 3 vol. vol. 1. General theory of Criminalistics]. Moscow : Yourist, p. 19 [in Russian].

[2] Exarchopulo A. A. (1993) *Krymynalystycheskaia teoryia: formyrovanye y perspektyvы razvytyia v uslovyiakh NTR: avtoref. dys. ... d-ra yuryd. nauk* [Forensic theory: formation and prospects of development in conditions of scientific and technological revolution : extended abstract of Doctor of Sciences: 12.00.09]. SPb, p. 12 [in Russian].

[3] Gorsky D. P. (1966) *Nauchnaia teoryia y sposobы ee obobshchenyia* [Scientific theory and methods of its generalization]. *Questions of philosophy*. № 8, p. 43–47 [in Ukrainian].

— general theory should be a closed conceptual system whose elements are closely linked and organically intertwined with each other[1].

Despite a rather monotonous understanding of the essence of general and separate forensic theories, at the same time, scholars express in many respects opposing judgments about the structure of these theories as elements of the system of criminalistics, as well as the naturei of the intertextual connections between. Thus, some scholars regard the general theory and individual doctrines as independent elements of the science of criminology. In particular, V. S. Mitrichev proposed in the theory of icriminalisticsi to isolate two groups of doctrines: general doctrines, that arei the theoretical basics of science as a whole or its separate sections, and separate doctrines constituting the scientific basis of existing directions of criminalistics activity. To general doctrines, he referred to forensic methodology, general provisions of technology, tactics and techniques; to separate doctrines — the theory of identification, the doctrine of skills, the doctrine of morphology, trace evidence, forensic materialism[2]. V. O. Obraztsov also excludes from the composition of general theory separate criminological theories, distinguishing in the system of criminalistics two components: General part: general theory and special part: set of individual students and theories[3].

Contrary to the propositions, it is proposed to consider a separate forensic theory as a subsystem of the general theory of criminalistics and its subject as an element, part, side of the subject of general theory, and from these positions to form the structure of general theory. In the structure of criminalistics general theory O. O. Eksarkhopulo allocates three sections: theoretical basis of forensic science, forensic theories of crime, forensic theories of knowledge of the event of a crime in the process of its disclosure, investigation and prevention[4].

At the same time, it should be admitted that there is no consensusї among adherents of the above concept on the construction structure and the elemental composition of the general theory of criminalistics. Moreover, the complexity of the issue leads to the need for criminologists to reconsider their research,

[1] Belkin R. S. (1997) *Kurs krymynalystyky: v 3-kh t. T. 1: Obshchaia teoryia krymynalystyky*. [Criminalistics course: Composed of 3 vol. v. 1. General theory of Criminalistics]. Moscow : Yourist, p. 49 [in Russian].

[2] Mitrichev V. S. (1976) *Teoryia sovetskoi krymynalystyky (dyskussyonnaia postanovka voprosa o tak nazыvaemыkh krymynalystycheskykh uchenyiakh). Referat nauchnoho soobshchenyia na Kh krymynalystycheskykh chtenyiakh* [The theory of Soviet criminalistics (discussion formulation of the question about so-called forensic doctrines). Abstract of the scientific report while X criminalistic readings]. Moscow : VNIISE, p. 9 [in Russian].

[3] Obraztsov V. A. (1994). *Krymynalystyka: tsykl lektsyi.* [Criminalistics: cycle of lectures]. Moscow : Yurikon, p. 22 [in Ukrainian]. The same author (1996) *Krymynalystyka: kurs lektsyi* Criminalistics: cycle of lectures. Moscow : Pravo i zakon, P. 11 [in Russian].

[4] Exarchopulo A. A. Papers mentioned above, p. 20 [in Russian]. *Krymynalystyka: uchebnyk* (1995) [Criminalistics: manual / edited by T. A. Sedovoy, A. A. Exarchopulo] SPb. : Publishing house: LGU, p. 18 [in Russian].

review their own opinions. From the beginning R. S. Belkin distinguished the following basic elements of the general theory of criminalistics:

1) Introduction to the general theory of criminalistics (science related part of general theory — the subject of science, its tasks, principles, laws of development and place in the system of scientific knowledge);

2) separate criminological theories (doctrines): doctrine regarding the mechanism of crime, theory of forensic identification, the theory of forensic diagnostics, forensic doctrine of traces, doctrine of the laws on information about crime and its participants, on regularities of working with evidence, on crime, execution and concealment crime and so on. At the same time, according to the author, along with developed forensic theories should be allocated less developed and practically only highlighted;

3) doctrine of forensic methods: forensic methodology in the narrow sense of this concept;

4) doctrine of forensic language: system of concepts and definitions used in criminalistics;

5) forensic systematics: the principles of the distribution of forensic knowledge by sections of science, from the system of forensic science in general, its system of sections and ending with separate forensic systems and classifications.

Analyzing the proposed structure of the general theory of Criminalistics, we cannot but notice that there is a certain mixing of the various levels of generalization of theoretical constructs, in particular, the doctrine of methods, the language, forensic systematics should relate to theories of general scientific orientation, while the doctrine of the mechanism of crime, on the regularities of the information on the crime and its participants, on the regularities of working with evidence to separate scientific doctrines. The concept proposed by R. S. Belkin does not fully meet criteria for delimitation of general and individual theories as a whole and a part, on which the author, apparently, also drew attention because in subsequent writings he made the appropriate adjustments. In the last paper *Course of Criminalistics* R. S. Belkin offers a wider structure of the general theory of forensics, among which the elements include:

1) provisions where the idea of criminalistics subject is formed, its purpose, purpose and place in the system of scientific knowledge, the concept and content of its general theory (first section: introduction to general theory of criminalistics);

2) provisions reflecting objective patterns of the crime mechanism in the aspect of criminalistics;

3) provisions that reflect objective patterns of information about a crime and offender, patterns of collection, evaluation and use of evidence, and are the basis for the development of forensic means, methods and

recommendations on the use of evidence in the practice of combating crime, which are divided into four sections:

a) forensic doctrine of the laws of the occurrence of information about the crime and the offender;

b) forensic doctrine about the laws of gathering evidence;

c) forensic doctrine of the patterns of evidence research;

d) forensic doctrine of the laws of evaluation and use of evidence.

Next follows the system of separate forensic doctrines: About skills; on the way of committing and hiding crimes; about the mechanism of trace formation; about traces; fixation of evidentiary information; about forensic registration; about search; about the versions and planning of the investigation; general principles of the methodology of forensic expert studies; about causality; about identification; forecasting, etc. The structure layout ends with the doctrines of methods and language, as well as of forensic taxonomy, which make up three separate sections[1].

Architectonics of the general theory of criminalistics, of course, was a certain step forward and differed from the designs proposed in both form and content. However, she is not without known weakness. Firstly, in an effort not to assume previous mistakes, R. S. Belkin deduces from the system of certain forensic theories regarding crime mechanism, although it calls the last "position that reflects the objective laws in the mechanism of crime in the aspect of criminalistics", which, on our opinion, can hardly be defined more successful. In addition, from the epistemological and etymological point of view, the "doctrine of the laws", is not entirely correct at all, since the doctrine (theory) is a system of knowledge of a certain group of laws of objective reality. In this regard, it is more expedient to speak about "forensic theory of crime", "forensic theory of crime knowledge", the subject of study of which will be the laws of information about crime and offender, as well as patterns of collection, study, evaluation and use of evidence. Perception results of the listed laws are the basis for the formation and improvement of other separate theories of a certain orientation, for example, students about the version and planning, fixing evidence, investigating situations, etc., and for the development of forensic means, techniques and recommendations to optimize the process of detection and investigation of a particular crime. Secondly, it is not entirely clear what three separate sections are about methods of teaching, language and forensic taxonomy and where these sections are located in the criminalistics system.

Sufficiently close to the position of R. S. Belkin, we can admit statements of M. V. Saltevsky concerning the mentioned problem, which to the most important in forensic doctrines:

[1] Belkin R. (1997) *Krymynalystyka: uchebnyk. T. 1: Ystoryia, obshchaia y chastnye teoryy*. [Course of Criminalistics course: Composed of 3 vol. v. 1. General theory of Criminalistics]. Moscow : Yourist, p. 56–60 [in Russian].

1. Doctrine of appropriateness: a) the mechanism of committing a crime; b) the emergence of information and its sources about the crime and its participants; c) the collection and use of forensic information for proof.

2. Separate forensic theories (doctrines): about skills; about traces and properties; the way of committing a crime; about versions and schedules (versions); about the mechanism of trace formation; on the systematization and registration of forensic sources of information; the collection, storage, processing and automated use of information; identification and grouping.

Author emphasizes that list of certain forensic theories (doctrines) is changing with the development of criminalistics depending on the needs of the practice of combating crime. Therefore, the above list is exemplary[1].

I. M. Kirsanov proposed a peculiar structure of the general theory of Criminalistics, in which certain forensic theories are differentiated into two levels: that are elements of general theory and which are studied in different sections of criminalistics. To the first, he refers to the doctrine of the mechanism of the crime and its reflection; the doctrine of the organization of activities for the detection, prevention and disclosure of crimes and the doctrine of the general methods of criminalistics[2]. A. V. Ishchenko in general divides the theory into fundamental (general) and applied. If theoretical constructions, he states, affect the development of the whole science, used in all its components (technology, tactics, methods), then they can be regarded as fundamental. In the case when the research results are aimed at solving a limited range of issues, a local task, then they should be considered as applied. Fundamental theories are: general theory of criminalistics; forensic science development theory; doctrine of principles of criminalistics; teaching methods; doctrine of subject matter; doctrine of language; forensic theory of causality; forensic theory about the mechanism of trace formation; forensic theory of traces; forensic theory of organization of work with proofs; the theory of forensic cybernetics and others.[3] O. Yu. Golovin came to the conclusion that the most acceptable structure of the general theory of criminology is as follows: Science based foundations of Criminalistics; methodological foundations of criminology; system of separate forensic theories (doctrines)[4]. According to V. G. Lukashevich, strengthening of integration processesi in science leads to the formation within the framework

[1] Saltevskiy M. V. (1997) *Kriminalistika. V sovremennom izlozhenii juristov: uchebnoe i prakticheskoe posobie* [Criminalistics. In the modern presentation by lawyers : tutorial]. Kharkov : Rubikon, P. 22 [in Russian].

[2] Kirsanow Z. I. (1992) Sistema obshhej teorii kriminalistiki. System of general theory of Criminalistics. Moscow : Acad. MVD RF, P. 8–10 [in Russian].

[3] Ishchenko A. V. (1996) *Metodolohichni ta orhanizatsiini problemy rozvytku kryminalistychnykh naukovykh doslidzhen: avtoref. ... dys. d-ra yuryd. nauk* [Methodological and organizational problems of the development of forensic scientific researches : extended abstract of Doctoral thesis]: 12.00.09. Kyev, P. 15 [in Russian].

[4] Golovin A. Yu. (2002) *Kriminalisticheskaja sistematika* [Forensic systematics]. Moscow : LeksEst, P. 77 [in Russian].

of criminalistics of individual integrative theories", such as theory of making a forensic decision "the theory of criminal (crimeï) and forensic activity", "the theory of information about the crime and its participantsi", "Forensic theory of communication" and others.[1]

These positions, of course, far from all of those expressed in forensic literature on the system of criminalistics in general and its general theory in particular, indicate that this problem remains one of the most controversial science-education problems. In this regard, it seems expedient to express some initial provisions that need to be taken into account in the implementation of the systematization of forensic knowledge. First, the differentiation of theoretical constructs into general and individual ones is primarily due to the degree of universality of the elements of the object of knowledge displayed by them, which either the forensic science itself, or the crime of the crime, or the crime investigation. Secondly, the theory can only claim general values if it applies to the whole subject of science, reflects it as a whole, and not one of its elements. Third, the very general theory as a section of forensic science is a system education, which includes both theories of general scientific level and individual scientific theories. An analysis of the nature and features of existing inter-theoretical connections makes it possible to conclude that between the theories of the general-level level, mainly, the relationship is manifested horizontally, whereas for the system of separate scientific theories (the student) a more specific vertical relation exists: theory of forensic identification — the theory of trace evidence — the theory of fingerprint identification. At the same time, the relation between the subordination of the whole and the part existing between the subject of the general theory of forensic science and certain forensic theories, and serve as a criterion, which allows to assign one or another theoretical construction to the theory of a certain level.

It should also be noted that in forensic literature today, there are many opposing points of view and understanding of the most separate criminalistic theories (students) and their definition of the place in the criminalistics system. Agreeing in general with the fact that certain criminological theories (the doctrine) are an integral part of the general theory of Criminalistics, preceded by the latter or, conversely, generated by it and investigate only a certain circle of laws of objective reality among those who study criminology in general, scientists- criminologists express different approaches to substantiating the

[1] Lukachevich V. G. (1997) *Integracija sovremennogo nauchnogo znanija i tendencii postroenija chastnyh kriminalisticheskih teorij. Teoreticheskie i prakticheskie problemy obespechenija raskrytija i rassledovanija prestuplenij kriminalisticheskimi metodami i sredstvami : sb. nauch. tr.* [Integration of modern scientific knowledge and the tendency to construct specific forensic theories. *Theoretical and practical problems of providing disclosure and investigation of crimes by forensic methods and means* : collection of scientific papers]. Kyev : Ukr. acad. vnutr. del., p. 6–17 [in Russian].

possibility of referring one or another theoretical constructs to the level of a separate forensic theory and determining their place in the Criminalistics system.

Indeed, theoretical basis of Criminalistics is constantly changing, replenishing with theories of varying degrees of maturity, scientific and practical significance. Today it can be argued that Criminalistics, like any other science, is a system of theories, because only as a system of theories, science can explain various phenomena and connections in modern times and predict the course of development in the future[1]. In particular, one can admit the completion of the development of the forensic doctrine of the victim, forensic classification of crimes, forensic theory of temporary ties and relations in the investigation of crimes, forensic theory of investigative situations, forensic characterization of crimes[2] and so on. Serious applications have been made about the need to create a theory of a forensic object[3], a forensic theory of causality[4], forecasting, and[5] so on.

At the same time, applications and statements about the already formed one or another new theory or the need for such a development should be as substantiated as possible, given that far not all theoretical constructions can claim the level of individual scientific theories. Thus, V. O. Obraztsov proposes to create a "general" (emphasis our own — V. Zh.) forensic theory of interaction, the scientific and practical need in which is felt more clearly[6]. It seems that this situation is partly due to the rather free interpretation of the largely controversial thesis R. S. Belkin, that the reserve of the system (implies separate theories —

[1] Shtoff V. A. (1978) *Problemы metodolohyy nauchnoho poznanyia* [Problems of the methodology of scientific perception]. Moscow : Nauka, p. 20 [in Russian].

[2] Tsentrov E. E. (1988) *Kriminalisticheskoe uchenie o poterpevshem* [Forensic doctrine of the victim]. Moscow : Yurid. Lit.; Obraztsov V. A. (1988) Kriminalisticheskaja klassifikacija prestuplenij [Forensic classification] of crimes. Krasnoyarsk; Meshkov V. M. (1995) *Kriminalisticheskoe uchenie o vremennyh svjazjah i otnoshenijah pri rassledovanii prestuplenij: avtoref. dis. ... d-ra jurid. nauk* Forensic doctrine of temporal ties and relations in the investigation of crimes : extended abstract of Doctor of Sciences: 12.00.09. Moscow; Drapkin L. Ya. (1987) *Osnovy kriminalisticheskoj teorii sledstvennyh situacij: avtoref. dis. ... d-ra jurid. nauk* [Fundamentals of forensic theory of investigative situations : extended abstract of Doctor of Sciences]: 12.00.09. Moscow; Kolisnichenko A. N., Konovalova V. E. (1985) *Forensic classification of crimes. tutorial* [Forensic classification of crimes. tutorial]. Kharkov : Yurid. int-t, and others.

[3] Klochkov V. V. (1988) *Obekt, predmet i sistema sovetskoj kriminalistiki. Predmet i sistema kriminalistiki v svete sovremen-nyh issledovanij : sb. nauch. tr*. [Object, subject matter and system of Soviet criminalistics. Subject and system of forensic science in the light of modern researches : collection of scientific papers]. Moscow, p. 7–21 [in Russian].

[4] Belkin R. S. (1979) *Kurs sovetskoj kriminalistiki: v 3-h t. T. 3: Kriminalisticheskie sredstva, priemy i rekomendacii* [Soviet criminalistics course: Composed of 3 vol. vol. 3. Forensic means, methods and recommendations]. Moscow : Acad. MVD RF/ [in Russian].

[5] Gorshenin L. G. (1993) *Osnovy teorii kriminalisticheskogo prognozirovanija : monografija* [Fundamentals of forensic forecasting theory : monograph]. Moscow : Acad. MVD RF; Zhuravel V. A. (1999) *Problemy teorii ta metodolohii kryminalistychnoho prohnozuvannia: monohrafiia* [Problems of theory and methodology of forensic forecasting : monograph]. Kharkiv : Pravo [in Ukrainian].

[6] Obraztsov V. A. (1988) *Problema formirovanija ponjatija ob"ekta kriminalistiki. Predmet i sistema kriminalistiki v svete sovremennyh issledovanij : sb. nauch. tr*. [The problem of forming the concept of the object of forensics. Subject matter and system of forensic science in the light of modern researches : collection of scientific papers]. Moscow, p. 37 [in Russian].

V. Zh.) Make separate theoretical constructions or some totality of such constructions, the degreeiof consolidation of which can be evaluated differently by one or another researcher. From this assessment, the recognition of such a population depends on a separate forensic theoryєor a denial of such quality[1].

This approach does not contribute to solving the problems under consideration, but, on the contrary, generates unnecessary discussions. In our opinion, all innovations claiming the status of "a separate forensic theory", must be correlated with those criteria that are developed or need to be developed in forensic science. Neglecting these criteria leads to a purely subjective evaluation, sometimes without sufficient scientific argumentation, the results of a scientific search, to an artificial mechanical transfer into the general theory of such theoretical constructions, which granted the status of a separate forensic theory on the own will of one or another scientist. Doubtful theoretical constructions include the following "theory of forensic programming of forensic creative systems"[2], "the theory of complicated direct knowledge", "the theory of recognition"[3], "forensic doctrine of the instrument of crime (forensic weapon science)"[4], "forensic science of smells"[5], etc.

As to the criteria on which it is expedient to evaluate one or another theoretical construction from the point of view of the presence of the features of the theory in it, only the first steps are made for their determination. Thus, R. S. Belkin among such criteria first of all highlights the general principles of formation and substantiation of conclusions[6]. In addition, it seems that each separate Criminalistics theory must have the object, subject and methods of research, to reveal its content and the nature of relations with other theories (doctrines), to define the purpose, tasks, functions and place in the criminalistics system, to form on a certain scientific hypothesis, have the necessary empirical basis, as well as the corresponding degree of consolidation, which makes it possible to identify certain regularities that supplement, clarify the subject of science of criminology in general.

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[1] Belkin R. P. 91987) *Kriminalistika: problemy, tendencii, perspektivy. Obshhaja i chastnye teori* [Criminalistics: problems, trends, prospects. General and specifics theories]. Moscow : Yurid. lit. P. 144 [in Russian].

[2] Zorin G. A. (2000) *Teoreticheskie osnovy kriminalistiki* [Theoretical Foundations of Criminalistics]. Minsk: Amalfea, P. 19 [in Russian].

[3] *Kriminalistika. Obshhaja chast' / pod red. V. E. Kornouhova* (2000) [Criminalistics: General part / edited by V. E. Kornouhova]. Moscow : Yourist, P. 54–60 [in Russian].

[4] Obraztsov V. A. Havalan V. A. (2002) *O kriminalisticheskom uchenii ob orudii prestuplenija. Tezisy Vseros. kriminalist. chtenij, posvjashh. 100-letiju so dnja rozhd. prof. A. N. Vasil'eva* [About the criminalistic doctrine of the instrument of crime. Abstracts All Russia. criminalist readings, dedicated to 100th anniversary of birth of Professor A. N. Vasilyeva]. Moscow : MAKS Press, p. 104–108 [in Russian].

[5] Bassay V. D. (2003) *Osnovy kryminalistychnoi odorolohii: avtoref. dys. ... d-ra yuryd. nauk* Fundamentals of forensic science of smells : extended abstract of Doctor of Sciences: 12.00.09. Kyev, 31 p. [in Ukrainian].

[6] Belkin R. P. (1987) *Kriminalistika: problemy, tendencii, perspektivy. Obshhaja i chastnye teorii* Criminalistics: problems, trends, prospects. General and specifics theories. Moscow : Yurid. lit. p. 145 [in Russian].

Organization of forensic theories (students) included in the structure of the general theory of criminology should be made taking into account the following provisions:

— between the subjects of the general theory of Criminalistics and certain forensic theories (disciples) there are relations of subordination of the whole and part;

— each separate theory (doctrine) complements and clarifies the subject of criminalistics examining only a limited range of regularities among those who study criminalistics in general. Thus, Ye. I. Zuyev noted that certain forensic doctrines specify the general theory of criminology, supplementing it with new data[1];

— nature of the laws exploring each of the forensic theories created (the student) determines the order of their distribution.

In view of the above, it is considered expedient to allocate two blocks in the structure of the general theory of criminalistics: 1) science based basics of Criminalistics including certain forensic teachings (theories) of the general scientific level about the object, object, methods, sphere of research, system, nature, conceptual the apparatus and the categories of criminology (the language of criminology), its inter-scientific connections and place in the system of knowledge, the history of development and the current state; 2) forensic doctrines (theories) of a separate scientific level relating to the study of the regularities that are part of the subject of the researches on criminalistics, reveal its essence and specifics.

As is well known, the laws are manifested and formed mainly on the theoretical level on the basis of empirical studies of the whole subject field of science. Analysis of scholar opinions in the literature makes it possible to consider in the most general form the subject of Criminalistics as a system of interconnected patterns of two levels: 1) patterns of occurrence, existence and disappearance of information about the mechanism of the crime (functional side of criminal activity) and the traces generated by him; 2) the regularities of obtaining, researching, evaluating and using information about the mechanism of the crime and the resulting traces in the process of proof.

Consequently, forensic theories (studies) of a separate scientific level should be divided into two groups:

1. Forensic theories (doctrine) regarding the mechanism of crime:

— Forensic doctrine of criminal method;

— Forensic doctrine of the mechanism of trace formation;

— Forensic doctrine of trace evidence;

— Forensic doctrine about skills;

[1] Zuyev E. I. (1988) *Predmet, zadachi, metody i sistema sovetskoj kriminalistiki. Kriminalistika (aktual'nye problemy)* [Subject, tasks, methods and system of Soviet Criminalistics. Criminalistics (actual issues)]. Moscow, p. 15–18 [in Russian].

— Forensic Victimology;
— Forensic homology (the doctrine of the perpetrator's personality);
— Forensic doctrine of temporal connections and relations;
— Forensic classification of crimes;
— Forensic description of crimes, etc.
2. Forensic theories (doctrine) knowledge of the mechanism of crime:
— Theory of forensic identification;
— Forensic theory of forecasting;
— Criminological theory about the version;
— Forensic theory of planning and organization of investigation;
— Forensic theory of fixing evidence;
— Forensic theory of causality;
— Forensic theory of tactical operations;
— Forensic doctrine of criminal registration, etc.

The list of certain forensic theories (doctrines) is not exhaustive and final, since these theories (doctrines) are constantly evolving, and changes in their systems are due to the following factors: a) emergence of certain needs in the practice of combating crime; b) development of related branches of knowledge and their integration or differentiation; c) development of the general theory of Criminalistics as a result of penetration into the essence of the subject of science; d) development of the most separate forensic theories, change of relations and dependencies between[1].

Conclusion. Consequently, solving these and other problems is a prerequisite for the successful development of conceptual approaches to the formation of separate criminalistics (theories) of different levels and orientations, which collectively form the basis of the general theory of forensic science as a system of fundamental principles for the pursuit of scientific research in this field of knowledge.

ОКРЕМІ ВЧЕННЯ В СТРУКТУРІ ЗАГАЛЬНОЇ ТЕОРІЇ КРИМІНАЛІСТИКИ

В. А. Журавель

Розглянуто концептуальні підходи до формування й застосування окремих криміналістичних учень (теорій) як наукових конструкцій, що становлять основу структури загальної теорії криміналістики та визначають рівень розроблення теоретико-методологічної бази цієї науки. Надано авторське розуміння поняття «окреме криміналістичне вчення (теорія)» і висловлено пропозиції стосовно систематизації окремих криміналістичних учень, їх місця в структурі загальної теорії криміналістики. Зазначено, що сучасна система окремих криміналістичних учень (теорій) є динамічною і її вдосконалення зумовлене потребами судової та

[1] Klimenko V. I. (2013) *Obshhaja i chastnye kriminalisticheskie teorii. Uchenye zapiski Tavricheskogo nac. un-ta im. V. N. Vernadskogo* [General and specific theories of Criminalistics. Scientific notes of V. N. Vernadsky Taurida National University Series “Jurid. science”]. vol. 26 (65). № 1. P. 231 [in Russian].

слідчої практики, розвитком суміжних галузей знань, загальної теорії й самих окремих криміналістичних учень, зміною зв'язків і залежностей між ними. Визначено критерії, яким має відповідати окреме криміналістичне вчення (теорія). Виокремлено дискусійні питання щодо досліджуваної проблеми, окреслено шляхи оптимізації наукових розробок у цій царині знань.

Ключові слова: загальна теорія криміналістики, структура загальної теорії криміналістики, окремі криміналістичні вчення (теорії), систематизація окремих криміналістичних учень (теорій).

ЧАСТНЫЕ УЧЕНИЯ В СТРУКТУРЕ ОБЩЕЙ ТЕОРИИ КРИМИНАЛИСТИКИ

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Рассмотрены концептуальные подходы к формированию и реализации частных криминалистических учений (теорий) как научных конструкций, составляющих основу структуры общей теории криминалистики и определяющих уровень разработки теоретико-методологической базы этой науки. Дано авторское понимание понятия «частное криминалистическое учение (теория)» и высказаны предложения по систематизации частных криминалистических учений, их места в структуре общей теории криминалистики. Предложено в структуре общей теории выделять два блока: 1) научные основы криминалистики, которые включают в себя частные криминалистические учения (теории) общенаучного уровня об объекте, предмете, методах, сфере исследования, системе, природе, понятийном аппарате и категориях криминалистики (языке криминалистики), ее связях с другими науками и месте в системе знаний, истории развития и современном состоянии; 2) криминалистические теории (учения) отдельного научного уровня, которые касаются исследования закономерностей, которые входят в предмет исследования криминалистики, раскрывают его сущность и специфику. Подчеркнуто, что характер закономерностей, которые исследует каждое из частных криминалистических учений (теорий) обусловливает порядок их упорядочения в структуре общей теории. При этом между предметами общей теории криминалистики и частных криминалистических учений (теорий) существуют отношения подчиненности целого и части. Отмечено, что современная система частных криминалистических учений (теорий) динамична и ее усовершенствование обусловлено нуждами судебной и следственной практики, развитием смежных областей знаний, общей теории и самих частных криминалистических учений, изменением связей и зависимостей между ними. Определены критерии, которым должно отвечать частное криминалистическое учение (теория). В частности, обращено внимание на то, что каждое частное криминалистическое учение (теория) должно иметь объект, предмет и методы исследования, раскрывать его содержание и характер отношений с другими учениями (теориями), определять цель, задачи, функции и место в системе криминалистики, формироваться на определенной научной гипотезе, иметь необходимую эмпирическую основу, а также соответствующую степень консолидации, которая предопределяет возможность выделения определенных закономерностей, дополняющих, уточняющих предмет науки криминалистики в целом. Обозначены дискуссионные вопросы в исследуемой проблеме, очерчены пути оптимизации научных разработок в этой области знаний.

Ключевые слова: общая теория криминалистики, структура общей теории криминалистики, частные криминалистические учения (теории), систематизация частных криминалистических учений (теорий).

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ROLE OF TACTICAL OPERATIONS IN FORENSIC SYSTEM

Issues of finding the place of tactical operations in the criminalistics system and the criminal proceedings process are considered. It is proved that in solving this issue it is necessary to proceed from the nature of tactical operations, the prospects for their development, as well as the specifics of the relationship of forensic tactics and methods of investigating certain types of crimes. The development of tactical operations as a scientific concept serves as a kind of bridge, which combines tactics and investigation techniques that enriched the investigation as a whole. It is substantiated that the tactical operation belongs to the means of forensic tactics and already in this capacity, as well as other tactical and forensic means, is realized in the forensic method. The necessity of creation of a separate forensic theory of tactical operations, the creation of which will help to level the controversial positions of scientists in determining the place of tactical operations in the criminalistics system, is proved. Proposed directions of further scientific developments from the considered problem are offered.

Keywords: tactical operations, place of tactical operations in the criminalistics system, formation and implementation of tactical operations, forensic theory of tactical operations.

Formation of the concept of tactical operations involves finding out the place of this category in the criminalistics system and the criminal proceedings. This question directly influences the construction of tactical operations and their implementation in the practice of investigators and judicial authorities. In this regard, M. P. Yablokov rightly argued that the completeness and orientation of these developments depends on the part of Criminalistics that will develop the problems of tactical operations that are carried out to solve various tasks and separate investigatory actions of the investigation in general[1].

[1] Yablokov P. (1985) *Kriminalisticheskaja metodika rassledovanija (nekotorye teoreticheskie polozhenija)* [Forensic investigation technique (some theoretical positions)]. Moscow : MGU, p. 76 [in Russian].

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At the same time, tactical operations, being an important forensic category and an effective means of solving tactical tasks, have not yet found their final place in the criminalistics system. This is evidenced by the various, sometimes contradictory judgments of criminologists. Thus, some scholars believe that the tactical operation acts as a category of forensic tactics, belongs to the subject of the latter, and its main theoretical provisions should be developed precisely in this section of the criminalistics system. In particular, I. F. Panteleyev notes that the tactical operation is not due to the peculiarities of the investigation of any particular group of crimes, is more general in nature, and because the necessary category of forensic science belongs to the subject of investigative tactics[1].

Investigating considered problems, R. S. Belkin incorporates tactical combinations (operations) into the general provisions of forensic tactics[2]. V. I. Komissarov takes a similar position on this issue, according to which tactical combinations (operations) are likely to be considered in the section of investigative tactics. Although he draws attention to the fact that the problems of the relationship of investigative actions (that is, the definition of the circle of primary and subsequent) in a particular criminal proceeding in the subject of investigative tactics should not be studied[3].

S. I. Tsvetkov notes that the basis for the inclusion of tactical operations in the content of forensic tactics may be a close relationship between their purpose and content and separate investigative actions, between tactical operation, investigative situation and tactical decisions that are considered within the framework of forensic tactics[4]. S. F. Zdorovko convinces that in determining the place of tactical operations in the criminalistics system, one should proceed from the general principles of the relation of forensic tactics and methods, and concludes that the tactical operation is a category of forensic tactics[5]. Some scholars refer to the subject of forensic tactics to determine the purpose and set of actions in the planning and implementation of tactical

[1] Panteleev I. F. (1980) *Teoreticheskie problemy sovetskoj kriminalistiki : ucheb. posobie* [Theoretical issues of Soviet Criminalistics: tutorial]. Moscow : Press: TASS, p. 21 [in Russian].

[2] Averianova T. V. Belkin R. S. Korukhov Yu. G. Rossinskaya E. R. (1999) *Kriminalistika : ucheb. dlja vuzov* [Criminalistics: manual for High Schools / edited by R. S. Belkin]. Moscow : NORMA-INFA-M, p. 211 [in Russian].

[3] Komissarov V. I. (1987) *Teoreticheskie problemy sledstvennoj taktiki : monografija* [Theoretical problems of investigative tactics : monograph]. Saratov : Publishing house of Saratov University, p. 107–110 [in Russian].

[4] Tsvetkov S. I. (1986) *K voprosu o formirovanii chastnoj kriminalisticheskoj teorija takticheskih operacij. Problemy pervonacha-l'nogo jetapa rassledovanija : sb. nauch. tr.* [Towards formation of a specific forensic theory of tactical operations. Issues of investigation initial stage : collection of scientific papers]. Tashkent: TVSH MVD SSSR, p. 31–39 [in Russian].

[5] Zdorovko S. F. (2002) *Taktychni operatsii pry rozsliduvanni vbyvstv, shcho vchyniaiutsia orhanizovanymy hrupamy i zlochynnymy orhanizatsi-yamy: avtoref. dys. ... kand. yuryd. nauk* [Tactical operations while investigation of murders committed by organized groups and criminal organizations : extended abstract of candidate thesis]. 12.00.09. Kharkiv, p. 7 [in Russian].

operations[1]. V. Yu. Shepitko also believes that tactical operation is a category of forensic tactics. As for the forensic methodology, then, according to the scientist, the tactical operation finds its concrete manifestation in relation to a specific type of crime, type orientation and content[2].

Criminalists believing that a tactical operation should find its place in the method of investigating certain types of crime, occupy another position on this issue. In this regard, in literary sources, it was suggested that, along with the development of general provisions of the theory of tactical operations, as well as typical tactical operations that have a high level of community, there is a tendency to study the possibilities and conditions of their use in investigating certain types of crimes. Emergence of tactical operations on the implementation scale beyond tactics of individual investigative actions led to a fairly active dissemination in criminology of the thought of the need to exclude this category from forensic tactics and attributing it to the subject of the method of investigation of certain types of crime[3].

According to A. V. Shmonin, planning of investigations and tactical complexes can be considered as means (resources) of certain forensic methods, the system of which can be imagined as a triad: investigative situations — tactics — the subject of evidence. investigation situations — tactics — the subject of evidence[4]. In his opinion, the functional structure of a separate forensic methodology consists of elements such as investigative situation, planning of investigations and tactical complexes.

In turn, G. A. Matusovskyi tactical operation considered tactical operation as a category of forensic methodology[5]; I. F. Gerasimov and O. D. Trubachov attributed it to the constituent part of the methodology

[1] Bakhin V. P. Hora I. V. Tsymbal P. V. (2002) *Kryminalistyka: kurs lektsii* [Criminalistics: cycle of lectures]. Irpin: Academia of SBGS of Ukraine, p. 1. P. 170 [in Russian].

[2] Shepitko V. Yu. (2007) *Kryminalistychna taktyka (systemno-strukturnyi analiz): monohrafiia* [Forensic tactics (system and structural analysis) : monograph]. Kharkiv : Kharkiv, yurid. P. 176, 177; The same author [in Russian]. (2007) Rol typovykh taktychnykh operatsii v systemi zabezpechennia efektyvnosti dosudovoho slidstva. Pytannia borotby zi zlochynnistiu : zb. nauk. pr. Kharkiv [Role of typical tactical operations in the system of ensuring the effectiveness of preliminary investigation. Issues of fighting crime: Scientific paper collection]. Kharkiv : Krossroud, Issue 14. P. 194, 199 [in Ukrainian].

[3] Kanevsky L. L. (1982) *Planirovanie rassledovanija i razrabotka takticheskih operacij po delam nesovershennoletnih. Algoritmy i organizacija reshenij sledstvennyh zadach : sb. nauch. st*. [Planning investigation and developing tactical operations for juveniles. Algorithms and organization of solutions to investigative tasks : collection of scientific papers]. Irkutsk: Publishing house of Saratov Irkutsk, p. 67–69; Yakushin S. Yu. (2004) *Taktycheskie sredstva rassledovanija prestuplenij: ponjatie i sootnoshenie* [Tactical means of crime investigation: concept and ratio]. Ross. Sledovatel. № 10, p. 2–4 [in Russian].

[4] Shmonin A.V. (2006) *Metodika rassledovanija prestuplenij : ucheb. posobie* [Methodology for investigating crimes: tutorial]. Moscow : Yustitsinform, p. 128–137 [in Russian].

[5] Matusovskyi G. A. (1999) *Jekonomicheskie prestuplenija: kriminalisticheskij analiz : monografija* [Economic crimes: forensic analysis : monograph]. Kharkov : Consum, p. 149–156 [in Russian].

for investigating crimes[1]; V. O. Obaztsov and O. V. Lagutin tactical operations included in the subject matter of an investigation method of certain types of crimes[2]; from the point of view of M. O. Selivanov, tactical operations in criminal proceedings system as a unit of investigators and other actions provided for by law are nothing more than part of the methodology of the investigation[3].

By the definition of B. V. Shchur, consideration of tactical operations as part of a separate forensic methodology is fair, since their implementation takes place at the level of application of forensic methods of a certain type, and such elements of the latter as its initial and subsequent stages should cover not only the possibility of holding separate investigative actions and their tactics, but also the agreed complexes of these actions, as well as necessary operational-search, organizational, technical and other measures[4]. The content and direction of the tactical operation, as noted by L. Ya. Drapkin and V. M. Karagodin, due to the investigative situation and the group (specific) features of the crime under investigation. Although these operations are of a general nature, at the same time, they must be developed directly in the forensic methodology according to the specifics of the investigation of a particular group of crimes.

As M. P. Yablokov emphasizes, the method of investigation of various types of crimes is largely due to the clear interconnection of the system of complexes of urgent, urgent and other investigative actions in the system of operations. Emphasizing the importance of tactical operations in this process, he concludes that techniques and means of conducting operations should be developed within the framework of the investigation of certain types of crime[5].

M. P. Yablokov's opinion was supported by some scholars who indicate that today she most clearly outlines the place of tactical operations in the criminalistics system, namely, in the methodology for investigating certain types of crimes. Tactical operation — is the search and development of scientific and technical recommendations on effective methods and methods of

[1] Gerasimov I. F. Trubachev A. D. (1976) *O sovershenstvovanii metodik raskrytija i rassledovanija hishhenij. Profilaktika i rassledovanie posjaga-tel'stv na socialisticheskuju sobstvennost' : sb. nauch. tr.* About improvement of disclosure methods and larceny investigation. Prevention and investigation of encroachments on socialist property: Collection of scientific papers Gorky: Gork : VSH MVD SSSR. Issue 5. P. 78 [in Russian].

[2] Obraztsov V. A. (1977) *K voprosu o metodike raskrytija prestuplenij. Vopr. bor'by s prestupnost'ju* [About the methods of crime disclosure. Issues regarding the fight against crime]. Moscow : Yurid. lit. Issue 27. P. 168; [in Ukrainian]. Lagutin A. V. (1990) *Takticheskie operacii pri rassledovanii prestuplenij. Kriminalistika i sudebnaja ekspertiza* [Tactical operations while crime investigation. Forensic science and criminalistics]. Kyev : Vyshcha Shkola, Issue 20. P. 16 [in Ukrainian].

[3] Selivanov N. A. (1982) *Sovetskaja kriminalistika: sistema ponjatij* [Soviet Criminalistics: concept system]. Moscow : Yurid. lit. P. 92 [in Ukrainian].

[4] Shchur B.V. (2010) *Teoretichni osnovi formuvannja ta zastosuvannja kriminalistichnih metodik : monografija* [Theoretical bases of formation and application of forensic methods : monograph]. Kharkiv : Kharkiv, yurid., p. 185 [in Ukrainian].

[5] Yablokov M.P. Papers mentioned above, p. 79, 80 [in Ukrainian].

determining the direction of investigation of certain types of crimes at one stage or another. Consequently, scientific developments of the types of such operations fully and completely meet the requirements of the methodology for investigating crimes and should in principle be an integral part of this section of Criminalistics[1].

M. O. Marochkin convinces that the tactical operation is a development of scientific and practical recommendations on effective methods and methods of determining the direction of investigation at one or another stage of the investigation of certain types of crimes, and thus, scientific developments of typical tactical operations with regard to specific types of crimes fully and completely meet the requirements of the methodology for investigating crimes and should become its integral part[2]. V. I. Kuklin notes that tactical operations should take the appropriate place in the method of investigating certain types of crime, because only here they can be filled with concrete theoretical and practical content[3].

According to Ye. Kornukhov, in the method of investigation of crimes should not be about the method, but about tactical operation aimed at solving a particular tactical task. While investigating the same crime specific, in the presence of a real investigative situation, there is an adaptation of the typical method (operation, a set of investigative actions) to the conditions of the individual investigator or the need to develop a heuristic method of action. Scientist distinguishes between the science of criminology and the system of textbooks on Criminalistics. The point is that the reflection (systematization) of forensic knowledge in these systems is significantly different. If the science system reflects the objective patterns of the object of knowledge, the system of textbooks is based on another principle didactic, and therefore one can raise the question of the place of teaching about tactical operations in the system of textbooks on Criminalistics. Scientist substantiates the position that this knowledge should be part of the structure of the general theory of criminology[4].

A certain scientific interest is the opinion of V. A. Zhuravel who emphasizes the fact that in the forensic method of investigation of crimes as

[1] Astashkina E. N. Marochkin N. A. Mihalcuk A. E. Reshetnikov V. Ya. (2003) *Rassledovanie prestuplenij: kriminalisticheskie kompleksy: uchebno.-prakt. posobie* [Crime investigation: forensic complexes: Educational and practical textbook]. Moscow : Prior, p. 23 [in Russian].

[2] Marochkin N. A. (1999) *Teoreticheskie problemy takticheskih operacij v kriminalistike* [Theoretical issues of tactical operations in criminalistics]. Saratov: Publishing house of Saratov University, p. 29 [in Russian].

[3] Kuklin V. I. (1983) *Metodika rassledovanija otdel'nyh vidov prestuplenij* [Method of investigation of certain types of crimes]. Ivanovo: Publishing house of Ivanovo University, p. 90–91 [in Russian].

[4] Kornouhov V. E. (2008) *Metodika rassledovanija prestuplenij: teoreticheskie osnovy* [Methodology for investigating crimes: Theoretical bases]. Moscow : Norma, pp. 94–97, 110–112; *Kurs kriminalistiki. Osobennaja chast' / pod red. V. E. Kornouhova* (2001) [Criminalistics course. General part / edited by V. E. Kornoukhov]. Moscow : Yourist, vol. I, p. 194–206 [in Russian].

informational and cognitive model[1], special investigative situations and typical versions, typical systems of investigative actions and tactical operations acquire special significance. All of these categories have a significant impact on the formation of modern concepts of certain forensic methods, are their inalienable components, determine the effectiveness of a specific act of investigation. In his opinion, tactical operations should be developed in the context of the formation of the appropriate species or subspecies methodology (micromethods), that means to be maximally tied to typical investigative situations and to proceed from the competitive tactical tasks facing the investigator. This is connected, first of all, with the needs of practice, with the need for comprehensive conduct of investigations, operational search, auditing and other actions to solve tactical tasks[2].

In turn, I. M. Komarov, O. O. Cheburenkov, V. I. Shikanov, reflecting on the place of tactical operations in the criminalistics system, indicate that the tactical means considered are a connecting link between investigative tactics and the methodology for investigating certain types of crimes. In particular, V. I. Shikanov noted that there are enough grounds to argue that tactical operations are increasingly becoming a manifestation as a rather important structural element of investigative tactics and methods of investigating certain types of crimes[3]. Afterwards the scientist argues that a separate forensic theory of tactical operations is a new essential part of Criminalistics which content fills the gap between tactics and investigative method[4].

According to I. M. Komarov, forensic operations, depending on the types that reflect the content and structure of the laws of the subject of criminalistics, *can and should be developed within the framework of both forensic tactics and methods of investigation of certain types of crimes* (italics of ours — *V. Sh.).* Arguing his position, the scientist emphasizes that in Criminalistics, the term "tactics", is a doctrine of the tactics of conducting

[1] Zhuravel V. A. (2008) *Problemy formuvannia bazovoi metodyky rozsliduvannia zlochyniv. Visn. Akad. prav. nauk Ukrainy* [Problems of forming basic method of crime investigation. Bulletin of the Academy of Legal Sciences of Ukraine]. Issue 1 (52), p. 231–242 [in Ukrainian].

[2] The same author. (2009) *Systemy slidchykh dii ta taktychni operatsii v strukturi okremoi kryminalistychnoi metodyky rozsliduvannia zlochyniv. Visn. Akad. prav. nauk Ukrainy* [Systems of investigative actions and tactical operations in the structure of a separate forensic methodology of investigation of crimes. Bulletin of the Academy of Legal Sciences of Ukraine]. № 2(57), p. 197–208 [in Ukrainian].

[3] Shikanov V. I. (1978) *Aktual'nye voprosy ugolovnogo sudoproizvodstva i kriminalistiki v uslovijah sovremennogo nauchno-tehnicheskogo progressa : monografija* [Actual issues of criminal legal proceedings and criminalistics in the conditions of modern scientific and technological progress : monograph]. Irkutsk: Publishing house of Irkutsk, pp. 115 [in Russian].

[4] The same author. *Teorija takticheskih operacij sledovatelja (perspektivy razvitija). Algoritmy i organizacija reshenija sledstvennyh zadach : sb. nauch. tr.* (1982) [The theory of tactical operations of the investigator (prospects of development). Algorithms and organization of solutions to investigative tasks: Collection of scientific papers]. Irkutsk : Publishing house of Irkutsk University, pp. 65 [in Russian].

individual investigative actions as a means of solving problems. The task of the same tactical operations is much wider than the tasks of investigative actions. In fact, it is a systemic system, which investigatory actions cannot be solved on their own, and it is comprehensively solved by all components of the structure of forensic operations (actions of various character). That is why the patterns on which the forensic operation is based are different from the regularities of investigative actions. In this regard, the classification of the study of forensic operations only to the section *Tactics of Science*, according to I. M. Komarov, is a mistake. At the same time, according to the scientist, certain types of forensic operations can be attributed to the subject of forensic tactics and are developed only within this section. This applies to types of operations that cover only a few tactical techniques within one or a variety of (homogeneous or dissimilar) investigative actions. Certain types of forensic operations really should be considered in the section *Methods of science*, but this only applies to those containing various structure components and fit with their content in the laws of forensic methodology. It is about such components as separate investigative actions, forensic combinations and operations, organizational, technical and other actions[1].

Offering to consider "methodological and forensic operations", I. M. Komarov convinces that the subject of evidence in his practical activity in the system of pre-trial proceedings, along with technical and tactical and forensic operations, can use both methodological and forensic methods, which they understand under conditions investigation of the criminalistic method of cognition in the practical activity of the subject of evidence, a component of the system of forensic methods of investigation of certain types of crimes, which provides the possibility of solving the specialty the system of pre-trial tasks[2].

As O. O. Cheburenkov emphasizes, without denying the importance of the tactical operation for the method of investigating certain types of crimes and the possibility of its inclusion in the structure of a separate forensic methodology, tactical operations, even as part of the investigation methodology, primarily provide tactical tasks. These are compared with the ultimate objectives of the investigation, which require the full and reliable establishment of all circumstances in the criminal proceedings, are more restrictive and therefore require the use of means of tactical significance involved in tactical operations, rather than methodological recommendations that form the methods of investigating certain types of crime. In addition, tactical operations may be

[1] Komarov I. M. (2010) *Osnovy chastnoj teorii kriminalisticheskih operacij dosudebnogo proizvodstva : monografija* Fundamentals of forensic operation specific theory in pre-trial proceedings : monograph. Moscow : Yurlitinform, pp. 129–145 [in Russian].

[2] The same author. (2002) *Kriminalisticheskie operacii v dosudebnom proizvodstve : monografija* [Forensic operations in pre-trial proceedings : monograph]. Barnaul : Publishing house Altai State University, pp. 175 [in Russian].

general in nature, not due to peculiarities of investigation of a certain type of crime, and repeated in the investigation of various criminal cases, regardless of the nature of the crime. Obviously, in this case, the issues of their organization and conduct are not covered by the subject of the method of investigation of certain types of crimes. Consequently, the notion of "tactical operation", directly corresponds to the section of forensic science *Forensic tactics*. Within the existing system of science of Criminalistics, it is expedient to consider all common issues in the development and implementation of tactical operations for investigated crimes: Within the existing system of science of Criminalistics, it is expedient to consider all common issues in the development and implementation of tactical operations for investigated crimes: It is possible to process and accordingly study the content of tactical operations of the most general nature, which do not depend on the type of various categories of investigated crimes and criminal cases. However, not all questions of tactical operations can be considered in forensic tactics. Specific tactical operations carried out on specific categories of criminal cases should be considered within the framework of separate criminalistic methods, the structured elements of which are these operations. This will take into account, to a large extent, all the features of the specific objects, conditions and tasks of investigation of the corresponding types of crimes in the course of processing certain tactical operations[1].

A. V. Dulov and E. O. Loginov occupy a separate position on the considered issue, they consider that tactical operations should be investigated in an independent, special section of the system of science of criminalistics. In particular, according to AV Dulov, main theoretical issues of the tactical operation should be placed in the section of investigative tactics, and with the development of forensics to separate them into an independent section *Organizational Principles of the Investigation*[2]. Ye. O. Loginov also notes that in the tactics section it is necessary to concentrate on the study of the tactics of individual investigative actions, and all other problems including tactical operations, should be included in the section *Organizational basis of the investigation*[3]. Regarding stated opinions, it was noted in the forensic literature that today it is unlikely that the section *Organizational Principles of the Investigation* actually formed in the criminalistics system is unlikely to be recognized. Therefore, tactical operations need to be developed in one of the

[1] Cheburenkov A. A. (2008) *Obshheteoreticheskoe polozhenie i prakticheskie aspekty kriminalisticheskoj taktik*i [General theoretical provisions and practical aspects of forensic tactics]. Moscow : Yurlitinform, pp. 105–106 [in Russian].

[2] Dulov A. V. (1979) *Takticheskie operacii pri rassledovanii prestuplenij* [Tactical operations while crime investigation]. Minsk : Publishing house: BGU, pp. 46–53 [in Russian].

[3] Loginov E. A. (1996) *Teoreticheskie osnovy takticheskih operacij i ih proizvodstvo na pervonachal'nom jetape rassledovanija umyshlennyh ubijstv : dis. …kand. jurid. nauk* [Theoretical bases of tactical operations and their proceedings at the initial stage of intentional murder investigation : Candidate thesis]. Volgograd, pp. 43 [in Russian].

existing sections of science, until the issue of reorganization of the entire criminalistics system is finally resolved[1].

Consequently, the analysis of literary sources gives grounds to conclude that there is still no single, coherent position among criminologists to determine the place of tactical operations in the criminalistics system in scientific doctrine. It seems that in resolving this issue it is necessary to proceed from the nature of tactical operations, the prospects for their development, as well as the specifics of the relationship of forensic tactics and methods of investigation of certain types of crimes. Regarding the nature of the origin of tactical operations, they have always been considered as means of forensic tactics, were included in the subject of study of this section of the science of Criminalistics. It was within the framework of forensic tactics that the process of formation of the scientific concept of tactical operations, in particular, the concept, features, functions, types, structure, principles and other theoretical positions, took place. At the same time, the main area of the implementation of tactical operations is the forensic technique, and this is justified, since the provisions of forensic tactics are implemented in life, in practice, only through forensic techniques acquiring those specific features that reflect their adaptation to the conditions and objectives of the fight against a particular type of crime[2]. The essence of the relationship of methodology and investigative tactics is that tactics provides the necessary information for the organization of investigative activities, determines the direction of the investigator in a particular situation. The methodology provides for the establishment of a general direction of investigation, and tactics implements it in accordance with the situation and the data obtained at the same time, supplements and changes the instructions of the methodology[3]. In this regard, it is necessary to agree with it should be agreed with V. O. Konovalova, who emphasizes that the development of tactical operations as a scientific concept has become a kind of bridge, which combines tactics and investigation techniques that enriched the investigation as a whole[4].

Relying on the above, scientific research in this direction should be focused on the development of tactical operations in relation to the

[1] Astashkina E. N. Marochkin N. A. Mihalcuk A. E. Reshetnikov V. Ya. Papers mentioned above. pp. 23 [in Ukrainian].

[2] Belkin R. S. (1997) *Kurs kriminalistiki: v 3 t. T. 1: Obshhaja teorija kriminalistiki* [Criminalistics course: Composed of 3 vol. vol. 1. General theory of Criminalistics]. Moscow : Yourist, s. 295 [in Russian].

[3] Konovalova V. E. (1976) *Vzaimosvjaz' metodiki i taktiki rassledovanija. Metodika rassledovanija prestuplenij (obshhie polozhenija): materialy nauchno-prakt. konf.* Correlation of the methodology and tactics of investigation. Methodology of investigating crimes: Scientific and practical content Conf. Odessa, November. Moscow : All-Soviet Union Bureau of Criminalistics, p. 28 [in Russian].

[4] Konovalova V. E. (2010) *Genezis kriminalisticheskoj taktiki. Kriminalistika XXI stolittja: materiali mizhnar. nauk.-prakt. konf* [Genesis of criminalistic tactics. Criminalistics of the XXI century: Content of international sci. pract. Conf]. November 25–26. 2010, Kharkiv : Pravo, p. 348 [in Ukrainian].

investigation of certain types of crimes. For this, tactical operations require typing, since certain forensic techniques are designed to implement typical tactical operations, just as they take into account typical versions, typical situations, contain a typical sequence of investigative actions, and so on. It is in this capacity that tactical operations as a category of forensic tactics play an important role in the construction of certain techniques and are part of their structure as an independent element. But from this they do not lose their tactical nature.

Thus, the tactical operation belongs to the means of forensic tactics and already in this capacity, as well as other tactical and forensic means, is realized in the forensic method.

The above judgments characterize the current level of scientific views on the location of tactical operations in the criminalistics system. But they, in the opinion of I. M. Komarov are incomplete, truncated, since they lack the main link, which provides harmonious development of conceptual and special knowledge about forensic operations. Such a link, in the opinion of the scientist, is the general theoretical and general methodological provisions of forensic operation[1], that is, the provisions that form the basis of forensic theory of tactical operations, the need to create which has been repeatedly discussed in the special literature[2]. In particular, S. I. Tsvetkov states that it is logical to recognize the fact of forming a separate forensic theory of tactical operations[3]. In turn, I. M. Komarov states that today a new theoretical construction is being formed, which allows figuratively to imagine a separate theory of tactical operations in the criminalistics system[4].

These trends can have a significant impact on the science of Criminalistics in general, as well as stimulate a review of the views on the definition of the place of tactical operations in. In this regard, V. I. Shikanov noted that it is not yet possible to foresee in detail the consequences of this process. However, it is clear that significant changes will

[1] Komarov I. M. (2002) *Kriminalisticheskie operacii v dosudebnom proizvodstve : monografija* [Forensic operations in pre-trial proceedings : monograph]. Barnaul : Publishing house Altai State University, p. 119 [in Russian].

[2] Shikanov V. I. (1983) *Teoreticheskie osnovy takticheskih operacij v rassledovanii prestuplenij* Irkutsk: Publishing house of Irkutsk University, p. 5; [in Russian]. N.P. Yablokov (1985) *Kriminalisticheskaja metodika rassledovanija (nekotorye teoreticheskie polozhenija*) Forensic investigation method (some theoretical positions). Moscow : Publishing house Altai State University, p. 80 [in Russian]. Obraztsov V. A. (1995) *Kriminalisticheskoe uchenie o takticheskoj operacii. Kriminalistika / pod red. V. A. Obrazcova* [Forensic doctrine of tactical operation. Criminalistics edited by V. A. Obraztsov] Moscow : Yourist, p. 75–86; [in Russian]. V. N. Isaenko (2004) *Problemy teorii i praktiki ispol'zovanija takticheskih kompleksov v rassledovanii ubijstv. «Chernye dyry» v rossijskom zakonodatel'stve* [Issues of theory and practice of using tactical complexes while murder investigation. “Black holes”, in Russian legislation]. № 1. P. 368–382 [in Russian], and others.

[3] Tsvetkov S. I. Papers mentioned above, p. 31–39 [in Russian].

[4] Komarov I. M. (2012) *Kriminalisticheskie operacii dosudebnogo proizvodstva v sisteme metodiki rassledovanija prestuplenij : monografija* [Forensic operations in pre-trial proceedings in the methodology system of investigating crimes : monograph]. Moscow : Yurlitinform, p. 141 [in Russian].

affect the system of Criminalistics. In particular, it can be assumed that the theory of emerging tactical operations, together with the theory of investigative versions, will be the main sections of the doctrine of investigation and prevention of crimes[1]. At the same time, M. P. Yablokov argues with regard to the theory of tactical operation, which is in a state of origin, which, obviously, will correctly develop it within the framework of the general methodological part of Criminalistics[2]. I. M. Komarov concludes that the general theoretical and general methodological provisions on forensic operations can be harmoniously inserted into the section of the general theory of criminology as a separate forensic theory[3]. These judgments of scholars have found supporters in their view that tactical operations as a means of solving tactical tasks and as one of the most effective forms of interaction between investigators and other bodies should be investigated in the general methodological part of Criminalistics[4].

Indeed, forensic science and practice of investigation and judicial consideration of certain types of crimes accumulated, systematized and generalized enough volume empirical material, which is a starting point for the creation of a separate forensic theory of tactical operations, the urgency of which does not cause any doubts. The provisions of the forensic theory of tactical operations form, first of all, a system of knowledge (theoretical generalizations, explanations, conclusions) that characterizes the subject-practical and informative-cognitive aspects of the activity of investigation and judicial review of crimes. Like Criminalistics as a whole, a separate theory of tactical operations is applied because it is a scientific basis for the development and application of organizational and tactical means of criminal proceedings, the optimization of investigative and judicial activity, and the implementation of the needs of modern practices in the fight against crime. In addition, the creation of this theory will help to eliminate the controversial positions of scientists in determining the place of tactical operations in the criminalistics system.

It should be noted that until now the positions of criminologists and the place of tactical operations in the process of investigation and judicial proceedings remain uncoordinated. We can say that there are two most

[1] Shikanov V. I. (1983) *Teoreticheskie osnovy takticheskih operacij v rassledovanii prestuplenij* [Theoretical bases of tactical operations while crime investigation]. Irkutsk: Publishing house of Irkutsk University, p. 44 [in Russian].

[2] Yablokov M. P. (1985) *Kriminalisticheskaja metodika rassledovanija (nekotorye teoreticheskie polozhenija)* [Forensic investigation method (some theoretical positions)]. Moscow : Publishing house: MSU, p. 80 [in Russian].

[3] Komarov I. M. (2002) *Kriminalisticheskie operacii v dosudebnom proizvodstve : monografija* [Forensic operations while pre-trial proceedings : monograph]. Barnaul : Publishing house Altai State University, p. 119 [in Russian].

[4] Astashkina E. N. Marochkin N. A. Mihalcuk A. E. Reshetnikov V. Ya. Papers mentioned above, p. 23 [in Ukrainian].

generalized approaches to resolving this issue. Advocates of the first approach consider the investigation process (court proceedings) as a continuous procedure for the implementation of a list of tactical operations. Thus, A. V. Dulov at one time expressed a very courageous idea that the methodology of investigating various categories of crimes to a large extent should be based on the development of only complexes of tactical operations, which would significantly change the content of the methodology, make it more useful for practical investigation of crimes[1]. V. Ye. Kornoukhov on this issue notes that the investigator in the process of investigation mainly operates on the side evidence, and therefore the proof of the legal purposes of the investigation is through the establishment of interim facts, which determine the tactical tasks of the investigation, and thus the need for tactical operations[2]. Moreover, in his opinion, in the methodology in general should not be a method, but a tactical operation aimed at solving a particular task of investigation[3]. According to O. Ya. Baev, crime investigation of crimes can be imagined in the form of a sequential or parallel solution by the investigator of a number of local tasks that ensure the disclosure of a crime and a comprehensive, complete and objective study of the circumstances of the subject of evidence in a criminal case. At the same time, it is far from always possible to solve one or another problem by means of one investigative action, tactical reception, crime detection and investigation action. In such cases, investigator plans and implements a tactical operation[4]. But, as it is emphasized in forensic literature, so far neither theory nor practice has supported the categorical proposals of the cited authors[5].

In the second approach, tactical operations are considered as the appropriate subsystems of the investigation and litigation process. In particular, L. Ya. Drapkin regards tactical operations as efficient *subsystems* (italics ours. — *V. Sh.)* of investigation procedure[6]. Later, L. Ya. Drapkin and V. M. Karagodin investigative, organizational preparatory, other actions and crime detection and investigation activities conducted under a single plan and aimed at solving certain intermediate tasks subordinated to the general objectives of the investigation of a criminal case[7]. This idea is supported

[1] Dulov A. V. Papers mentioned above, p. 53 [in Ukrainian].

[2] Kornouhov V. E. (2008) *Metodika rassledovanija prestuplenij: teoreticheskie osnovy* [Methods of crime investigation: Theoretical bases]. Moscow : Norma, p. 93 [in Russian].

[3] Ibidem, p. 117.

[4] Baev O. Ya. (2003) *Osnovy kriminalistiki : kurs lekcij* [The essentials of Criminalistics: cycle of lectures]. 2nd ed revised supplemented. M. Examen, p. 252 [in Russian].

[5] Zhuravel V. A. (2006) *Taktychni operatsii v systemi kryminalistychnykh zasobiv protydii zlochynnosti. Teoriia ta praktyka sudovoi ekspertyzy i kryminalistyky : zb. nauk.-prakt. materialiv* [Tactical operations in the system of forensic means of combating crime. Theory and Practice of Forensic Science and Criminalistics Collection of scientific papers]. Kharkiv : Pravo, Issue 6. P. 32 [in Ukrainian].

[6] Drapkin L. Ya. (1995) *Takticheskie operacii — jeffektivnye podsistemy processa. Sledovatel': teorija i praktika dejatel'nosti* [Tactical operations are effective process subsystems. Investigator: theory and practice of activity]. № 1. P. 7 [in Russian].

[7] Drapkin L. Ya. Karagodin V. V. Papers mentioned above, p. 179 [in Ukrainian].

by I. M. Komarov, noting that, being *subsystems* (the letter of ours — *V. Sh.)* The system of criminal proceedings, forensic operations, isolated from the general connection of this system, are initially perceived as an indivisible whole[1].

The most categorical regarding this question is opinion of V. A. Zhuravel emphasizing that in the structure of the forensic methodology, there must be two constructions: systems of investigative actions and tactical operations. Each of them has its own functional purpose. If the first is aimed at solving general, strategic tasks of investigation, then the second — to solve tactical tasks. In this case, tactical operations as selective, situationally determined education occupy an intermediate link among the elements of the optimal system of investigative actions and operational-search activities, supplement them and address the specific intermediate task. It is under such conditions that it is possible to form tactical operations, the parallel conduct of which will not lead to a repetition (duplication) of individual investigative actions and operational-search activities that are part of their structure. At the same time, attempts to hyperbolize the value of tactical operations, to develop certain criminalistic methods only on the basis of their complexes will lead to the formation of such scientific abstraction, which will be separated from the needs of practice and which simply will not be possible to be implemented in the activities of investigating authorities[2].

It should be noted that V. A. Zhuravel is not a single in his opinions. In particular, according to G. A. Matusovsky, crime investigation requires the solution of complex tasks of a different nature and scope: from general tasks that relate to the full disclosure and investigation of the crime, establishment of all the circumstances to be proved in this case, disclosure of the perpetrators, to the tasks that are being done to establish the individual sides of the investigated event, to provide conditions for achieving the overall goal of the investigation. In this regard, we can talk about a strategic line in the investigation and resolution of tactical tasks and two interrelated directions in the activities of the investigator, due to his authority to make decisions on the direction of pre-trial investigation[3]. Moreover, even the founder of the idea of tactical operations A. V. Dulov noted that in the structure of the method of investigation of certain types of crimes in addition to the primary investigative actions, groups of tactical operations carried out under a certain category of criminal cases will be considered, which will contribute to the strengthening of the

[1] Komarov I. M. (2002) *Kriminalisticheskie operacii v dosudebnom proizvodstve : monografija* [Forensic operations while pre-trial proceedings : monograph]. Barnaul : Publishing house Altai State University, p. 44 [in Russian].

[2] Zhuravel V. A. (2012) *Kriminalistichni metodiki: suchasni naukovi koncepcii: monografija* [Forensic methods: modern scientific concepts : monograph]. Kharkiv : Publishing house: Apostil, p. 221 [in Ukrainian].

[3] Matusovskyi H. A. Papers mentioned above, p. 152.

scientific basis of the investigation crime, to improve the activities of investigating authorities[1].

According to our conviction, the position of the second group of scientists should be recognized more convincingly, since it is difficult to imagine the process of investigation, judicial review of crimes, which consists of conducting only one tactical operation. Nevertheless, it should be agreed that pre-trial investigation and judicial proceedings are primarily the implementation of an optimal system of investigative (courtroom) actions[2] and other measures determined by the subject of evidence and the investigative (courtroom) situation, and tactical operations specify this system, optimize it through an integrated approach to solving separate tactical tasks. Thus, tactical operations are effective subsystems of the criminal proceedings, which include tactical operations of pre-trial investigation and tactical operations of court proceedings.

Thus, the problem of determining the role of tactical operations in the criminalistics system and the criminal proceedings is not only a matter of theory but also of practice. The correct solution also depends on the completeness of the practical tasks of investigation and judicial review of crimes. Therefore, today a promising direction is the development of a separate forensic theory of tactical operations, which will further contribute to the enrichment of the general theory of Criminalistics, will provide an increase in the efficiency and rationalization of criminal proceedings.

МІСЦЕ ТАКТИЧНИХ ОПЕРАЦІЙ
У СИСТЕМІ КРИМІНАЛІСТИКИ

В. М. Шевчук

Досліджено проблеми з'ясування місця тактичних операцій у системі криміналістики та процесі кримінального провадження. Доведено, що при розв'язанні цього питання необхідно виходити з природи тактичних операцій, перспектив їх розвитку, а також специфіки взаємозв'язку криміналістичної тактики й методики розслідування окремих видів злочинів. Розроблення тактичних операцій як наукової концепції виступає своєрідним мостом, який з'єднує тактику й методику розслідування, що збагатило розслідування в цілому. Обґрунтовано, що тактична операція належить до засобів криміналістичної тактики й уже в цій якості, як і інші тактико-криміналістичні засоби, реалізується в криміналістичній методиці. Доведено необхідність створення окремої криміналістичної теорії тактичних операцій, створення якої сприятиме нівелюванню спірних позицій науковців щодо визначення місця тактичних операцій у системі криміналістики. Запропоновано перспективні напрями подальших наукових розробок з розглядуваної проблематики.

[1] Dulov A. V. Papers mentioned above, p. 52.

[2] Konovalova V. O. (2007) *Metodyka rozsliduvannia zlochyniv: optymalni systemy slidchykh dii. Visn. Akad. prav. nauk Ukrainy* [Methods of crime investigation: optimal systems of investigative actions. Bulletin of the Academy of Legal Sciences of Ukraine]. № 4(43). P. 155–160 [in Russian].

Ключові слова: тактичні операції, місце тактичних операцій у системі криміналістики, формування та реалізація тактичних операцій, криміналістична теорія тактичних операцій.

МЕСТО ТАКТИЧЕСКИХ ОПЕРАЦИЙ В СИСТЕМЕ КРИМИНАЛИСТИКИ

В. М. Шевчук

Исследованы проблемы определения места тактических операций в системе криминалистики и процессе уголовного производства. Доказано, что при решении этого вопроса необходимо исходить из природы тактических операций, перспектив их развития, а также специфики взаимосвязи криминалистической тактики и методики расследования отдельных видов преступлений. Разработка тактических операций как научной концепции является своеобразным мостом, который соединяет тактику и методику расследования, что обогащает расследования в целом. Обосновано, что тактическая операция относится к средствам криминалистической тактики и уже в этом качестве, как и другие тактико-криминалистические средства, реализуется в криминалистической методике. Тактические операции выступают эффективными подсистемами системы уголовного производства, которая включает тактические операции досудебного расследования и тактические операции судебного производства. Доказано, что криминалистической наукой и практикой расследования и судебного разбирательства отдельных видов преступлений накоплен, систематизирован и обобщен довольно объемный эмпирический материал, являющийся отправным для создания частной криминалистической теории тактических операций, актуальность построения которой не вызывает сомнений. Положения криминалистической теории тактических операций образовывают, прежде всего, систему знаний (теоретических обобщений, объяснений, выводов), которая характеризует предметно-практическую и информационно-познавательную сторону деятельности по расследованию и судебному разбирательству преступлений. Как и криминалистика в целом, частная теория тактических операций имеет прикладной характер, поскольку является научной основой для разработки и применения организационно-тактических средств уголовного производства, оптимизации следственной и судебной деятельности, реализации нужд современной практики борьбы с преступностью. Доказана необходимость создания отдельной криминалистической теории тактических операций, создание которой будет способствовать нивелированию спорных позиций ученых по определению места тактических операций в системе криминалистики. Предложены перспективные направления дальнейших научных разработок по рассматриваемой проблематике. Сегодня перспективным направлением является разработка частной криминалистической теории тактических операций, которая в дальнейшем будет способствовать обогащению общей теории криминалистики, обеспечит повышение эффективности и рационализации уголовного производства.

Ключевые слова: тактические операции, место тактических операций в системе криминалистики, формирование и реализация тактических операций, криминалистическая теория тактических операций.

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ESSENCE OF CRIMINALISTIC TACTICS

Genesis and ontology of criminalistic tactics is considered. Theoretical and legal grounds for investigative actions, as well as the logical scope and content of the tactics of separate investigative actions are determined. Criminalistic tactics is defined.

Keywords: theory of criminalistics, criminalistic tactics, criminal investigation, investigative actions.

Logic of constructing theoretical knowledge requires not only the generalization, systematization of scientific knowledge, but also the designation assigned to special groups of knowledge. In scientific perception traditionally the means of the knowledge designation is a term[1]. Dynamics and the current development level of scientific knowledge in a certain field can be judged by changes in terminology that are used in certain field of scientific activity. This requirement also extends to the theory of criminalistics.

From the beginning of the 20th century criminal investigators began to use the term "criminal tactics[2]" in their researches. The term "criminal tactics", has its own specifics of historical development. It is accepted that the founder of the idea of separation in the field of knowledge of the investigation of criminal acts of the section "criminal tactics", is Weingart, German criminalist (Albert Weingart, 1851–1914) described the idea of criminal tactics in his work "Criminal tactics". Guide for criminal investigation. It should be noted that in this scientific research Albert Weingart, explaining the essence of criminal tactics had in mind the idea of criminal police tactics above all. In particular he wrote: "For successful combat especially with professional criminals, it is necessary to find out, collect, combine already

[1] The term (in Latin: therminus means limit, boundary) is a word or phrase that clearly reveals the meaning of scientific concepts, his relationship and correlation with other concepts.

[2] Tactics (in Greek: taktika is art of troops) is a section of military science including theory and practice of training by combat units, various branches of the armed forces.

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known methods and develop new ones of fighting and prosecuting criminals, and the systematic presentation of methods of fight against crime, scientifically objective and practically verified methods of crimes investigating, finding out guilty persons, collecting evidence, detaining and convicting a criminal is nothing more than a criminal police tactic that is such a the necessary adherence to the art of the crimes disclosure as a military tactic in the art of war"[1]. Currently this idea continues to be developed by German criminalists[2].

In post-Soviet states, the term "criminal tactics", received a different development. Until the 30s of the twentieth century in manuals on criminalistics, the term "criminal tactics", is used[3]. In the following this term was transformed into of crime investigation tactic[4], investigative tactic[5], and finally into forensic tactics[6]. Due to the unification of forensic terminology in modern manuals on criminalistics the term "criminalistic tactics", is used. The change in terminology in this part of criminalistics took place not only because of criminal process development but also as a result of notion changes of nature of criminal acts investigation, clarifying the boundaries of actions system aimed at establishing circumstances related to the event of a criminal act, substantiating the difference in the investigation of criminal acts from pre-trial investigation, trial and other activities in criminal law enforcement. Despite the differences in the definitions of the criminalistic tactic, all manual authors on forensic term "criminalistic tactic", are referred to the area of criminal investigation. The difference between these definitions is due only to the different views of the authors on the nature of the investigation of criminal activities.

Criminal investigation is a subject area of human activity within which a process of knowledge is carried out that has a specific technology for obtaining new knowledge. First, criminal investigation is a form of professional activity[7]. This circumstance determines the fact that the criminal investigation has a regulatory character that means in a particular state only

[1] Weingart A. (1910) *Ugolovnaja taktika. Rukovodstvo k rassledovaniju prestuplenij* [Criminal tactics Guide for criminal investigation]. SPb. : Ovruch, p. 3 [in Russian].

[2] Kriminalistik Lexikon. 3, völlig neubearbeitete und erweiterte Auflage. Kriminalistik Verlag, Hüthig GmbH, Heidelberg. 1996. P. 187; Ackermann R. Clages H. Roll H. Handbuch der Kriminalistik. Kriminaltaktik für Praxis und Ausbildung. 2, aktualisierte Auflage. Richard Boorberg Verlag, 2003.

[3] Yakimov I. N. (1929) *Kriminalistika: ugolovnaja taktik*a [Criminalistics: Criminal tactics]. 2nd ed revised supplemented. Moscow [in Russian].

[4] *Criminalistics: Kriminalistika. Tehnika i taktika rassledovanija prestuplenij: uchebnik* (1938). Techniques and tactics of criminal investigation: manual. Moscow [in Russian].

[5] Vasiliev A. N. (1960) *Osnovy sledstvennoj taktiki : avtoref. dis. ... d-ra jurid. nauk* [The essentials of investigative tactics. Extended abstract of Doctor of Legal Sciences]. Moscow [in Russian].

[6] Vinberg A. I. (1965) *O nauchnyh osnovah kriminalisticheskoj taktiki. Pravovedenie* [About scientific bases of criminal tactics. Pavovedinie]. Moscow, № 3 [in Russian].

[7] Professional activity is productive activities within the limits of particular profession.

such criminal acts are described which are described in a special part of criminal law of a specific state and only in the order described in the criminal procedure law of this state. Thus, criminal investigation standardization is determined by the sources content of criminal law and the criminal process of a specific state.

Criminal investigation is cognitive activity aimed at establishing circumstances related to the event of a criminal act. In each state a legislator determines the scope and content of circumstances associated with the criminal event, which are relevant in the criminal law enforcement of a specific state. The availability of reliable information about circumstances associated with a criminal act that is the basis for the criminal legal qualification of a criminal event and a fair adjustment of criminal legal relations in a particular state. Scope and content of circumstances related to the criminal act is determined by the source of the criminal law (Criminal Law, Criminal Code, etc.) of the specific state and can change during the process of law-making. The circumstances connected with the event of a criminal act have a complex theoretical construction[1], therefore reflection in the material reality of these circumstances is always complex and mediated[2]. This explains the fact that a successful criminal investigation is always difficult and requires sufficient professional training, i.e., a long period of theoretical and practical training.

Secondly, criminal investigation by means of science is a type of scientific and cognitive activity. Therefore, structure subject basis of such criminal investigation is system collection of cognition objects (traces of circumstances related to a criminal act), system of cognitive actions (investigative actions) and the knowledge system (initial and methodological knowledge about criminal investigation). In criminalistics the description of regularities of traces appearance of circumstances associated with the event of a criminal act is summarized in the forensic technique section and a description of the regularities of the source and methodological knowledge of criminal investigation is summarized in the section about forensic procedure.

The system of cognitive actions in forensic cognition also has its own patterns and stands out in a special group of concepts. The logic of obtaining and forensic knowledge constructing requires a clear definition of the scope of these actions and formulation of their content. First of all, it should be taken into account that any activity exists in the form of a set of concrete actions which number and specifics depend on specific nature of the subject of activity, activity subject goals and conditions for its implementation. The peculiarity of action system of forensic knowledge is that conditions for

[1] In details see: Terekhovich V. N. (2015) *Teorija kriminalistiki. Obshhaja chast' : monografija* [Theory of Criminalistics. General information : monograph]. Riga, p. 59–101 [in Russian].

[2] Ibidem, p. 45–56.

criminal investigation are historically determined in a normative way in description of a criminal process. Such a description is always codified and exists in form of a normative act of a specific state (the Code of Criminal Procedure, the Criminal Procedure Law, etc.).

Criminal process description is nothing more than a description of criminal procedural actions and conditions that implementation and observance according to established rules can lead to a fire settlement of criminal legal relations. This is the meaning of scientific and cognitive activity aimed at criminal and legal protection of the most significant public values in the state. In each specific country, the description of the criminal process reflects historical experience of a particular society in determining the way to a fair settlement of criminal legal relations. In the case of developing countries this method can be partially or fully borrowed. For example, influence of Anglo-Saxon traditions description of criminal process has its own noticeable influence in countries of former British colonies. In Post-Soviet states, the description of criminal process has specific features of criminal process description of Soviet republics. The Soviet criminal trial has features of a German criminal trial. This fact should perceive as a legal field historical reality of a specific state without a comparative assessment whether it is good or bad.

On the one hand subjects of criminal legal relations in Latvia can be the state only in the form of representative institutions (prosecution party). On the other hand, it can be a natural person only, who is imputable or with a limited sanity and has reached the age of 14 years (defense). Essence of the controversial criminal process in Latvia is as follows: the party charges his claims regarding the defense side and appeals to the court to determine the means of criminal coercion against the perpetrator. The description of the contemporary criminal process in Latvia reflects the commitment to adhere to such principles of democracy as the principle of presumption of innocence, equality of the parties in defending their interests, controversy of the criminal legal dispute, impartiality of courts, etc. principles. Therefore, the entire criminal process in Latvia has two consecutive stages: pre-trial investigation (pre-trial procedure) and trial (legal procedure). During pretrial investigation a criminal case is prepared for trial in a certain way. At the stage of pretrial investigation such criminal procedural actions are carried out that are aimed at determining subject of a criminal legal dispute, determination and searching for a suspect, presenting initial charge, ensuring the accused's (suspect's) rights to defense, ensuring accused's personal participation in criminal proceedings if necessary, applying procedural enforcement measures regarding other participants in the criminal process, as well as other criminal procedural actions. The prosecution party reports the completion of the

pretrial investigation by writing and notifying about the decision by sending the criminal case to the court.

Among main criminal procedural actions of pretrial investigation, the discovery and criminal procedure of fixing traces related a criminal act, collecting and verifying necessary evidence of a criminal offense presence and other circumstances related to a criminal act should be noted. It is the implementation of this type of criminal procedure that constitutes the essence of any investigation of any criminal act, that means the establishment of circumstances related to a criminal act. Historically this group of criminal procedural actions is called investigative actions.

The word "investigative", is derived from the word "vestige". Event of a criminal act is reflected in material reality and is designated as traces of a criminal act. This explains the etymology of the word "investigative". Investigative actions are a variety of criminal procedural actions and are directly aimed at revealing traces of circumstances related to the event of a criminal act. Therefore, investigative actions can be defined as actions of the person performing pretrial investigation that are directly aimed at establishing circumstances related to criminal act.

By singling out a separate group "Investigative Actions", among criminal procedural actions, certainty is reached in understanding not only nature of the investigative actions but also logical scope and content of the investigative actions. Investigative actions nature is determined by facts that investigative actions are purposeful actions that means they are always oriented towards a reasonable goal achievement of circumstances related to criminal acts. Investigative actions are value-rational actions since they are oriented, to legal values that means legal understanding of a criminal act and the circumstances connected with. Logical scope and content of investigative actions are assigning normatively. So, the list of investigative actions and content of each of item is described in the source of the criminal procedural law of a specific state. It is the description in the criminal procedure law of types and content of the investigative actions that sets criteria for assessing the legitimacy of obtaining evidence during the investigation of a criminal act. Describing forensic system Hans Gross pointed out only three investigative actions: Inspection, Search and Seizure, Interrogation[1]. The modern system of investigative actions in the criminal process of Latvia is limited to the following list of investigative actions: interrogation, inspection, eye rate, questioning, exhumation, survey, investigative experiment, checking on the scene, identification, search, seizure and forensic examination.

[1] Hans Gross. (2002) *Rukovodstvo dlja sudebnyh sledovatelej kak sistema kriminalistiki* [Criminal Investigations, a Practical Textbook]. New edition reprinted from 1908, Moscow : LeksEst, p. 74–181 [in Russian].

In Latvia investigative actions allocation to a special group of criminal procedural actions the following general conditions for investigative actions performing are normatively defined:

— investigative actions estimated in advance are usually carried out from 8.00 a. m. to 8.00 p. m. In case of urgency when there is a danger of a substantial evidence loss of and a threat to objectives achievement of the criminal procedure the investigative actions are carried out immediately;

— at the beginning of investigative action, the person who performing investigative action informs the persons involved in the specific criminal procedure about their rights and obligations and warns about legal responsibility for non-fulfillment of their duties. A person for whom procedural duties are at the same time professional duties is not informed or warned;

— against a person participating in investigation, it is prohibited to use violence, threats, lies, as well as other unlawful and inappropriate morals or other actions that threaten the life and health of a person or affect his honor. Apart from of a medical officer, investigative actions that involve exposing a person's body are prohibited from producing or participating by the person of opposite sex;

— it is prohibited to disclose information about private life of a person who participating in investigation, as well as information containing professional or commercial secrets, except when it is necessary for proving t in criminal procedure;

— during investigative actions performing, the use of scientific and technical means is not allowed, if this threatens life and health of persons participating in the investigative action;

— proceedings realization and the results of investigative actions are formalized in form of protocol or expert conclusion.

As already mentioned above, the investigation of a criminal act is carried out realizing a system of investigative actions. Essence of a particular investigative action realizing is to obtain and verify new knowledge about the criminal act investigated. Reliability, admissibility and relevance of new knowledge[1] are the criteria for such verification. It is knowledge about criminal case that is being investigated and its criminal legal assessment forming claims basis that in accordance with the procedure established in the criminal procedure law are expressed by prosecution party regarding second party of criminal legal dispute. Choice of particular investigative action depends on data availability about knowledge obtaining that is most important for investigating a criminal act is more suitable with the help of a specific

[1] In details see: Terekhovich V. N., Nimande E. V. (2010) *Problema istinnostnogo i cennostnogo v kriminalisticheskom poznanii. Teorija ta praktika sudovoï ekspertizi i kriminalistiki : zb. nauk. prac'* [The problem of truth and value in criminalistic perception. Theory and Practice of Forensic Science and Criminalistics : collection of scientific papers]. Kharkiv : Pravo, Issue 10. P. 36–43; [in Russian]. Terekhovich V. N. Op. cit., p. 41–43 [in Russian].

investigative action. This choice reflects preliminary evaluation of the form for possible knowledge receipt about a criminal.

Depending on totality of means and methods of obtaining knowledge about circumstance traces related to a criminal act, investigative actions are divided to following groups:

— investigative actions related to forced monitoring (examination, inspection, investigative experiment);

— investigative actions related to hard-to-reach monitoring (search, seizure, exhumation);

— investigative actions related to questioning (interrogation, questioning, face-to-face interrogation, identification, verification of testimony on the spot);

— investigative actions related to research on information hidden from person realizing the investigation (forensic examination).

Apart from expertise all investigative actions allow direct perception and fixation of criminal act traces by a person realizing criminal investigation. Forensic examination is based on the mediated knowledge acquisition about the traces of a criminal act. This knowledge a person performing criminal investigation with the help of a forensic scientist producing special knowledge according the task of person performing criminal investigation.

The theoretical basis of all investigative actions are modern theories of observation, experiment, comparison, measurement and modeling. Therefore, the logical scope of investigative actions includes only such criminal procedural actions based on modern scientific knowledge about observation, experimentation, comparison, measurement and modeling[1]. It is the criterion making possible to identify the investigative actions in a separate specific group of criminal procedural actions and this criterion sets the condition for evaluating scientific validity of performing of a particular investigative action. According to this circumstance Shepitko V. Yu. noted that recommendations of criminal practice that do not meet requirements of scientific character and contradict the democratic principles of criminal procedure, cannot perform functions and should not be used in the practice of investigating crimes[2].

These features of forensic activity in terms of the logical scope and content of cognitive actions aimed at establishing circumstances related to criminal act constitute the scope and content of the concept of "criminalistic tactics". Type and content of a separate investigative action which is determined normatively in a given state (in Criminal Procedure Law, Code of Criminal Procedure, etc.) is the determining factor in the designation and definition of the tactics of a particular investigative action. Thus, the tactics of inspection, the tactics of interrogation, the tactics of the investigative

[1] In details see: Terekhovich V. N. Op. cit. p. 174–203 [in Russian].

[2] Shepitko V. Yu. (2010) *Kriminalisticheskaja taktika: sovremennoe sostojanie i perspektivy razvitija : izbran. trudy* [Forensic tactics: current state and development prospects] : Selections Kharkov : Apostil, p. 162 [in Russian].

experiment, and the tactics of other investigative actions are singled out and outlined. It is the tactic pattern totality of performing separate investigative actions that makes forensic tactics. Therefore, forensic tactics can be defined as a section of especial part of the criminalistics theory where patterns for performing are described and explained. Attempts by some authors to "embed", into criminalistic terminology such terms as judicial tactics, prosecutor's tactics, advocacy tactics and other similar "novels", have nothing to do with criminal investigation within the modern criminal procedure and do not belong to criminalistics. Use of such terms in scientific papers on criminalistics should be evaluated as obstruction of criminalistic terminology.

СУТНІСТЬ КРИМІНАЛІСТИЧНОЇ ТАКТИКИ

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Проведення кримінально-процесуальних дій досудового розслідування (слідчих дій) із виявлення й кримінально-процесуального закріплення слідів, що належать до події злочинного діяння, збирання й перевірка необхідних доказів наявності складу злочинного діяння та інших обставин, пов'язаних із цією подією, становить сутність будь-якого розслідування злочинного діяння. Сучасна система слідчих дій у карному процесі Латвії обмежена наступним списком слідчих дій: допит, опитування, очна ставка, огляд, ексгумація, освідування, слідчий експеримент, перевірка показань на місці, упізнання, обшук, вилучення й експертиза. У Латвії, виділяючи слідчі дії в особливу групу кримінально-процесуальних дій, нормативно визначаються також загальні умови їх проведення. За винятком експертизи всі слідчі дії допускають безпосереднє сприйняття й фіксацію слідів злочинного діяння особою, яка веде розслідування. Експертиза заснована на опосередкованому одержанні знання про сліди злочинного діяння. Це знання особа, яка веде розслідування злочинного діяння, одержує не саме, а за допомогою експерта, що робить спеціальне пізнання за завданням цієї особи. Теоретичною основою всіх слідчих дій є сучасні теорії спостереження, експерименту, порівняння, вимірювання й моделювання. Вид і зміст окремої слідчої дії, яка визначається нормативно в тій або іншій державі (у Кримінально-процесуальному законі, Кримінально-процесуальному кодексі й т. п.), є визначальними в позначенні й визначенні її тактики. Сукупність закономірностей тактик проведення окремих слідчих дій становить криміналістичну тактику. Тому криміналістичну тактику можна визначити як розділ особливої частини теорії криміналістики, у якім описуються й пояснюються закономірності проведення слідчих дій. Спроби деяких авторів «вмонтувати» в термінологію криміналістики такі терміни як судова тактика, прокурорська тактика, адвокатська тактика й інші подібні «новели» нічого спільного з розслідуванням злочинного діяння в межах сучасного криминального процесу не мають і до криміналістики не належать. Використання подібних термінів у наукових працях по криміналістиці повинне оцінюватися як засмічення криміналістичної термінології.

Ключові слова: теорія криміналістики, криміналістична тактика, розслідування злочинних діянь, виробництво слідчих дій.

СУЩНОСТЬ КРИМИНАЛИСТИЧЕСКОЙ ТАКТИКИ

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Рассмотрен генезис и онтология криминалистической тактики. Определены теоретические и законные основы производства следственных действий, а также

логический объем и содержание тактик производства отдельных следственных действий. Дано определение криминалистической тактики.

Ключевые слова: теория криминалистики, криминалистическая тактика, расследование преступных деяний, производство следственных действий.

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INITIAL STAGE OF INVESTIGATING CRIMES COMMITTED BY FOREIGNERS

Formation of theoretical foundations and practical recommendations concerning the features of the initial stage of crime investigation committed by foreigners has been investigated. Legislation that determining legal and organizational peculiarities of criminal proceedings in these conditions is systematized. Typical investigation situations of the initial stage of the investigation of crimes committed by foreigners are described and the peculiarities of their resolution are described.

Keywords: foreigner, legal status, investigation, investigative situation.

The conducted studies indicate that the crime of foreigners does not tend to decrease, but acquires new forms and means of implementation. Changes in public life contribute to their transformation, improvement of means and methods of criminal activity. Today, the development of international relations, the expansion of socio-economic ties, the simplification of the order of international travel, the increase in the intensity of migration, the formation of ethnic diasporas. These circumstances use criminals to commit unlawful actions, opening new criminal possibilities. The crime situation is negatively affected by the military conflict in the East of Ukraine, the penetration of persons with criminal intent into the territory of Ukraine, the hiding of criminals in the territory of foreign states. Thus, according to the General Prosecutor's Office of Ukraine, during 2016 foreigners committed 1046 criminal offenses, and in 2017: 1559[1].

Investigation of crimes committed by foreigners is due to additional complexities, the need to take into account the legal status of a foreigner, his individual characteristics. Interaction of the investigator with representatives of

[1] *Statystychni dani. Ofitsiinyi sait Heneralnoi prokuratury Ukrainy* [Statistics. Official website of the Verkhovna Rada of Ukraine]. URL: http://www.gp.gov.ua/ua/stst2011.html?dir_id=104404.

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various state and law enforcement bodies, application of measures of international cooperation is necessary for solving the set tasks.

Separate problems in investigating crimes committed by foreigners are highlighted in the theses of G. Nazarenko (2006), O. A. KalganoV. A. (2007), S. S. Kudinov (2009). It is believed that there is an urgent need for a systematic study of the process of investigating crimes committed by foreigners, taking into account the latest legislation and practical realities. Based on a wide range of issues covered by the issue, we focus on the initial stage of the investigation of such crimes.

The method of investigation of crimes committed by foreigners can be considered as a separate enviable methodology based on the allocation of which is a criminalistic criterion — the person of the offender who is a foreigner, and accordingly the investigation of crimes is characterized by criminal procedural, organizational tactical and psychological peculiarities. The outline of the features of the initial stage of the investigation of crimes committed by foreigners, the formation of the principles of the appropriate methodology — is the purpose of the article.

According to the Clause 6 of Art. 1 of the Law of Ukraine "On the Legal Status of Foreigners and Stateless Persons", Foreigner is a person who is not a citizen of Ukraine and is a citizen (subject) of another state or states[1].

In Art. 10 of CPC of Ukraine among the principles of criminal proceedings is defined as "equality before the law and the court". In certain cases, and in accordance with the procedure provided by the CPC of Ukraine, certain categories of persons (minors, foreigners, persons with mental and physical disabilities) enjoy additional guarantees during the criminal proceedings.

Attention is drawn to the fact that the rights of a foreigner who is a suspect or accused are somewhat expanded, taking into account the peculiarities of his legal status. According to Part 18 of art. 3 of CPC Ukraine suspects, accused of my right to use my native language, receive copies of procedural documents in my own language or another language, and, if necessary, use the services of an interpreter at the expense of the state. A similar right exists in the victim, witness, other participants who do not speak the language of criminal proceedings (Part 9 of art. 1 Clause: 56, Part 4 of art. 1 Clause: 66, Part 11 of art. 3 64^1 CPC of Ukraine). According to Part 6 of art. 3 42 CPC of Ukraine suspect, accused, who is a foreigner and held in custody, has the right to meet with a representative of the diplomatic or

[1] *Pro pravovyi status inozemtsiv ta osib bez hromadianstva : Zakon Ukrainy vid 22 veres. 2011 r. № 3773-VI. Vidom. Verkhov. Rady Ukrainy* [About the legal status of foreigners and stateless persons : Law of Ukraine dated on 22 September. 2011, № 3773–VI. Bulletin of Verkhovna Rada of Ukraine 2012. № 19–20]. Art: 179. URL: http://zakon3.rada.gov.ua/laws/ show/3773–17 [in Ukrainian].

consular establishment of his state, which he is obliged to provide the administration of the place of detention.

These and other provisions are due to the adaptation of domestic legislation to international standards, leading international treaties that establish fundamental human rights and freedoms. That is, if a foreigner commits a crime on the territory of Ukraine, responsibility arises on general grounds. However, the peculiarities of criminal proceedings against foreigners should be taken into account. These peculiarities are also defined in the provisions of international treaties of Ukraine, which further regulate the legal status of foreigners, in particular those who have a diplomatic, consular and other type of immunity, certain issues of criminal proceedings with their participation. This is the UN Privileges and Immunities Convention of 1946, the General Agreement on Privileges and Immunities of the Council of Europe of 1949 with its Protocols, the Vienna Convention on Diplomatic Relations 1961, the Vienna Convention on Consular Relations of 1963, the Vienna Convention on the Representation of States in their relations with international organizations of a universal nature in 1975, taking into account their provisions, bilateral agreements are concluded. Taking into account these provisions, bilateral agreements are concluded.

For example, the Vienna Convention on Consular Relations of 1963 sets the privileges and immunities of consular offices and consular officials. Thus, a consular officer is not subject to criminal liability in the performance of consular functions, and if he has a diplomatic passport, he has the right to refuse to testify as a witness. Employees of the consular establishment and staff of the service staff may be called for testimony, but in the event of their refusal any coercive measures cannot be applied. However, a consular officer has the right, on his own initiative or at the request of the competent authorities of the receiving state, to provide relevant evidence (Articles 40–44)[1].

The foreigner's membership of the persons enjoying privileges and immunities, along with the documents certifying the identity of the foreigner, is certified by the documents issued by the Ministry of Foreign Affairs of Ukraine (hereinafter — the Ministry of Foreign Affairs of Ukraine), in accordance with the Regulation on diplomatic missions and consular offices of foreign states in Ukraine[2]. The document (authorization), confirming the belonging of foreigners to persons enjoying privileges and immunities, are accreditation cards of the series “D”, “K”, “C”, “A”.

[1] *Videnska Konventsiia pro konsulski znosyny: pryiniata 24 kvit. 1963 r. Verkhovna Rada Ukrainy* [Viennese Convention on Consular Relations]: approved on April, 23 1963, Verkhovna Rada of Ukraine [site]. URL: http://zakon2.rada.gov.ua/laws/ show/995_047 [in Ukrainian].

[2] *Polozhennia pro dyplomatychni predstavnytstva ta konsulski ustanovy inozemnykh derzhav v Ukraini, zatv. Ukazom Prezydenta Ukrainy vid 10 cherv. 1993 r. № 198/93. Verkhovna Rada Ukrainy* [Regulation on diplomatic missions and consular posts of foreign states in Ukraine, approved by a decree of the President of Ukraine from 10 June. 1993, № 198/93. Verkhovna Rada of Ukraine [site]. URL: http://zakon2.rada.gov.ua/laws/show/198/93 [in Ukrainian].

While investigating crimes committed by foreigners and having reason to believe that a foreigner involved in criminal proceedings has certain privileges and immunities, the investigator finds out the matter. In particular, he must send a request to the Ministry of Foreign Affairs of Ukraine in order to:

— checking whether a certain foreigner is in the diplomatic and consular register, if so, on what exactly which privileges and immunities are distributed to this person, on the basis of which normative legal acts (international agreements, conventions and acts issued by the Ukrainian authorities);

— requesting the relevant institution of a foreign state or organization in the interests of the law-enforcement body to confirm the authority of this person and the presence of her immunity, as well as obtaining the necessary consent for conducting investigative (search) actions against a foreigner[1].

A set of measures for checking the legal status of a foreigner and the reasons for his stay in Ukraine should include the sending of requests to other competent entities (the Ministry of Justice of Ukraine, the General Prosecutor's Office of Ukraine, the State Border Guard Service of Ukraine).

After this, taking into account the peculiarities of the investigative situation, the investigator decides which procedural actions with the foreigner, his relatives or property should be carried out to investigate the crime, and which permits according to the requirements of the current legislation should be obtained, or the presence of which persons should be provided for conducting Investigative (wanted) actions with a foreigner. It is about obtaining consent to prosecution, interrogating a foreigner, the presence of a prosecutor and a representative of the Ministry of Foreign Affairs of Ukraine during a search in a diplomatic institution of a foreign state or in their leased premises, etc.[2]

Thus, the timely and complete establishment of the peculiarities of the criminal procedural and special status of a foreigner will allow the investigator to determine with what exactly the rules of law (criminal, criminal procedural, international) should be applied during relations with him. This will make it impossible to violate his rights during the investigation, as well as promote proper organization of work in criminal proceedings, optimal conducting of separate investigative (search) actions with a foreigner.

The peculiarities of criminal proceedings for crimes committed by foreigners are related to individual features of a foreigner's identity as a specific participant in the criminal process, caused by a socio-psychological

[1] *Protsesualni ta taktychni osoblyvosti provadzhennia okremykh protsesualnykh dii z uchastiu inozemtsiv: metod. rekom* [Procedural and tactical peculiarities of carrying out of separate procedural actions with the participation of foreigners] Best practices Lugansk Main Investigations Directorate Ministry of Internal Affairs of Ukraine, Lugansk State University of Internal Affairs named after E. O. Didirenko 2012, p. 11–12 [in Russian].

[2] Procedural and tactical peculiarities of carrying out of separate procedural actions with the participation of foreigners: pp. 12–13 [in Ukrainian].

component that has a subjective and objective nature. Objective is the peculiarities of national-civic psychology, perception of a foreigner, his legal status, as well as the existence of special norms, including international, governing the participation of foreigners in the criminal proceedings of our country, subjective in the specificity of the perception of his foreigner personal involvement in the investigation and motivation of his actions in this procedure[1].

These features of foreigners require the use of certain organizational measures in the course of pre-trial investigation, for example, determining the order of carrying out investigative (search) actions with them, the speed of their conduct, etc. These features of foreigners require the use of certain organizational measures in the course of pre-trial investigation, for example, determining the order of carrying out investigative (search) actions with them, the speed of their conduct, etc. It is important that during the investigation, a person should not be discriminated against, based on national, ethnic or religious background. Feelings and traditions of foreigners must be studied and taken into account.

The actions from which criminal proceedings are commenced are essential for the further organization of the investigation. In practice, when the prosecutor's body finds information on the commission of crimes by foreigners, it is necessary to urgently verify, register, apply measures to fix and terminate criminal acts. The need for a preliminary check of information is due to: insufficient information to conclude that there are signs of the crime in question; not confident about the reliability of the information received about the commission of the crime by a foreigner (foreigners) or doubts about the reliable data provided by the applicant.

The initial stage of the investigation of crimes committed by foreigners is aimed at establishing the following circumstances:

— circumstances defined by Article 91 of Criminal Procedure Code of Ukraine.

— additional circumstances. It is about: a) the circumstances characterizing the identity of the offender-foreigner (country of citizenship, social, professional information, criminal experience), provided the group nature of the crime — the form and features of complicity; b) the methods of forming a criminal group, its structure, composition, the nature of criminal activity; c) transnational relations of a criminal group, territory (state) distribution, way of maintaining communication, financing of these persons, features of division of functional duties; d) methods of realization of criminal activity, including in the territory of foreign states; e) finding out the facts of crossing the border by foreigners, maintaining contacts with foreigners living

[1] Ibidem, p. 4.

abroad; Identification of channels for the supply of prohibited or restricted civilian casualties, as well as goods obtained by criminal means; e) the quantitative composition of criminals in the commission of each episode, the concrete actions of each; h) Identification of persons who did not participate directly in the committed crimes, but are aware of their preparation and deeds; g) the presence in the group of conflicts and contradictions, grounds for their occurrence; c) circumstances characterizing the financial activities of foreigners and criminal groups with their participation: sources of funds for the purchase of firearms and cold weapons, narcotic drugs, and the functioning of criminals ; funds received as a result of the sale of objects obtained by criminal means, source of receipt and purpose of use; ways to legalize the proceeds.

The list of the above circumstances is indicative and not exhaustive; however, it allows to focus the investigator's attention on a number of key points that must be clarified in the criminal proceedings.

The initial stage in the investigation of crimes committed by foreigners requires solving the problem issues related to:

1) the establishment of all persons involved in the criminal chain, and the need to identify all its elements;

2) high level of preparation of criminals, plans of action in different situations;

3) the need to ensure operational interaction with other competent authorities, including law enforcement agencies of Ukraine, competent authorities of foreign states, the involvement of Interpol and Europol, the application of international cooperation measures, etc.

One of the important circumstances to be determined at the initial stage of the investigation of crimes committed by foreigners is the legal status of the offender and the lawfulness of staying in the territory of Ukraine in accordance with the established documents. Therefore, the foreigner must provide these documents to the body of pre-trial investigation, and in case of their absence, the information should be requested from the authorized bodies.

First of all, this is the foreigner passport: namely: –document issued by the authorized body of a foreign state or the statutory organization of the UN, confirming the citizenship of a foreigner, certifies the identity of a foreigner or stateless person, grants the right to enter or leave the state and recognized by Ukraine. In determining the legal status of a foreigner and the legality of his stay in Ukraine, account should be taken of the effect of the visa-free regime between Ukraine and the European Union starting from June 11, 2017.

Important is the research on other documents. This is a visa, a certificate for permanent or temporary residence, a refugee card, a migrant card, etc. According to new requirements, these documents contain contactless electronic media — implanted in the form of the document contactless

integrated circuit for the introduction of personal data, parameters, including biometric. According to the Law of Ukraine *On the Uniform State Register of Demographic and Documents Affirming the Citizenship of Ukraine, Identifying a Person or Its Special Status*,[1]" forms of documents containing contactless electronic media are made in accordance with the requirements of state (national) and international standards and taking into account the recommendations of the International Civil Aviation Organization (ICAO) and should have a degree of protection that makes it impossible to their counterfeit (Article 15 of this Law).

Consequently, in Ukraine, the functioning of EDD is being introduced — an electronic information and telecommunication system intended for the storage, protection, processing, use and dissemination of information specified in the Law on individuals and documents issued with the use of the Registry, ensuring compliance with the freedom of movement guaranteed by the Constitution of Ukraine free choice of place of residence, prohibition of interference with private and family life, other rights and freedoms of a person and citizen.

Formation of typical investigative situations of the initial stage of the investigation of crimes committed by foreigners is accompanied by certain difficulties caused by the process of simulation of investigative situations with their subsequent resolution. This is determined by:

— the need to take into account the interconnection of various components of the investigative situation, the investigative and operational situation, the branching of the criminal structure of foreigners, the existence of interregional and international criminal ties, the reliability and completeness of the received operational information;

— the complexity of the organization of the process of the implementation of operational materials as a result of involvement in the investigation of crimes committed by foreigners as part of criminal groups, a significant number of forces and facilities of state and law enforcement agencies (the National Police, the Ministry of Internal Affairs of Ukraine, the Security Service of Ukraine, the General Prosecutor's Office of Ukraine, the State Customs Service of Ukraine, The State Border Guard Service of Ukraine, etc.);

— the complexity of the coordination of the activities of the investigating and operational group participants, which in some cases consists of

[1] *Pro Yedynyi derzhavnyi demohrafichnyi reiestr ta dokumenty, shcho pidtverdzhuiut hromadianstvo Ukrainy, posvid-chuiut osobu chy yii spetsialnyi status : Zakon Ukrainy vid 20 lyst. 2012 r. № 5492-VI. Vidom. Verkhov. Rady Ukrainy* (2013) [About the Uniform State Demographic Registry and documents confirming the citizenship of Ukraine, certify the person or his special status : Law of Ukraine dated on 20, November. 2012, № 5492–VI. Bulletin of Verkhovna Rada of Ukraine] № 51. Art: 716. URL: http://zakon5.rada.gov.ua/laws/show/5492–17 [in Ukrainian].

employees who are not subordinate to each other, and the activity and criteria of evaluation of work are regulated by various departmental regulations;

— the limited time factors that can be used to prepare a tactical operation, as well as the limited time for its implementation;

— the need to ensure the safety of the participants in the criminal process;

— the complexity of the combination of special requirements to ensure the secrecy of investigations by individual law enforcement officers and the need to involve a large number of employees at an early stage, the coordination of certain measures with the prosecutor's office and the court;

— the need for measures of international cooperation in criminal proceedings, including cooperation of operational units of states with the aim of clarifying the circumstances of criminal proceedings.

Summarizing, one can cite the following main types of investigative situations in the initial stage of the investigation of crimes committed by foreigners.

For the first situation, it is characteristic that at the disposal of law enforcement agencies there is information about the commission of a crime by a foreigner (foreigner). Persons committing criminal acts are not established, but research of various sources of information allows us to make reasonable assumptions about them. This situation is the most complex, since it requires the investigator to have significant professional skills and skills in order to identify the features of the subject in a timely manner and to be able to apply the necessary forensic recommendations at this stage of the investigation. Under these conditions, it is necessary to conduct vowel and secret investigative (search) actions aimed at detecting and documenting criminal activity.

The second investigative situation is characterized by a large amount of information on foreigners committing crimes. Despite the fact that all persons involved in criminal activity have not yet been established, the investigator has evidence and guidance information from various sources, certifying the involvement of foreigners in criminal acts. It is necessary to carry out vowels and covert investigatory (search) actions, in particular, the use of control over the commission of a crime, both internal (on the territory of Ukraine) and external, subject to international cooperation.

The third investigative situation has even greater informational certainty with regard to foreigners committing crimes, is the most favorable for pre-trial investigation. For example, several members of the criminal group were detained at the crime scene; pre-trial investigation begins with the results of the implementation of operational information, conducting operational-search activities. After inspecting the scene of the event, investigative (wanted) actions aimed at obtaining evidence are conducted. First of all, they are aimed at fixing criminal activity, establishing all the accomplices of the crime. It is

expedient to arrest a suspect in a place of preparation, execution or concealment of a crime.

Effective from the point of view of the next proof is the detention of criminals in the place of transfer or sale of objects of criminal assault, weapons, narcotic drugs (subject to preliminary documentation of criminal activity). The success of the next stage of the investigation will depend on how detailed all the components of the criminal mechanism are established, and the involvement of specific individuals in the direct commission of criminal acts or their promotion has been recorded.

The formation of typical investigative situations is important in developing a methodology for investigating crimes committed by foreigners. The analysis of typical investigative situations creates preconditions for their solution, provides pre-trial investigation of purposeful nature. The investigator has the opportunity to analyze such investigative situations, algorithms for their solution, and creatively adapt the information for solving the problems of a specific criminal proceedings. The combination of typical and individual provides an effective crime investigation.

ОСОБЛИВОСТІ ПОЧАТКОВОГО ЕТАПУ РОЗСЛІДУВАННЯ ЗЛОЧИНІВ, УЧИНЕНИХ ІНОЗЕМЦЯМИ

Ю. М. Чорноус, М. М. Шикоряк

Досліджено формування теоретичних засад і практичних рекомендацій щодо особливостей початкового етапу розслідування злочинів, учинених іноземцями. Систематизовано законодавство, що визначає правові та організаційні особливості кримінального провадження за цих умов. Наведено типові слідчі ситуації початкового етапу розслідування злочинів, учинених іноземцями та охарактеризовано особливості їх вирішення.

Ключові слова: іноземець, правовий статус, розслідування, слідча ситуація.

ОСОБЕННОСТИ НАЧАЛЬНОГО ЭТАПА РАССЛЕДОВАНИЯ ПРЕСТУПЛЕНИЙ, СОВЕРШЕННЫХ ИНОСТРАНЦАМИ

Ю. Н. Черноус, Н. Н. Шикоряк

Исследовано формирование теоретических принципов и практических рекомендаций относительно особенностей начального этапа расследования преступлений, совершенных иностранцами. Систематизировано законодательство, которое определят правовые и организационные особенности расследования преступлений, совершенных иностранцами. Обращено внимание на международные договора Украины, закрепляющие основные права и свободы человека и регламентирующие правовой статус иностранцев с иммунитетом от уголовной юрисдикции Украины; нормативно-правовые акты Украины, определяющие правовой статус иностранцев и особенности уголовного производства с их участием. Подчеркнуто, что комплекс мер по проверки правового статуса иностранца, оснований его пребывания на территории Украины, должен включать направление запросов компетентным субъектам (в Министерство иностранных дел Украины, Министерство юстиции Украины,

Генеральную прокуратуру Украины, Государственную пограничную службу Украины). Начальный этап расследования преступлений, совершенных иностранцами, направлен на установление обстоятельств, определенных ст. 91 УПК Украины. Их перечень не является исчерпывающим и во время расследования необходимо дополнительно устанавливать обстоятельства, которые характеризуют: личность преступника-иностранца и групповой характер преступления; правовой статус иностранца; механизм преступной деятельности; международные связи преступников и др. Начальный этап расследования таких преступлений нуждается в решении проблемных вопросов, связанных с: установлением всех лиц, вовлеченных в преступную цепочку, и необходимостью выявления всех ее элементов; высоким уровнем подготовки преступников, наличием планов действий в разных ситуациях; необходимостью обеспечения оперативного взаимодействия с другими компетентными органами, привлечением Интерпола и Європола, использованием мер международного сотрудничества и др. Приведены типовые следственные ситуации этого этапа расследования: имеется информация о совершении преступлений иностранцами, однако их личности не установлены; собрана ориентирующая информация относительно иностранцев, совершивших преступления; есть информация о совершении преступлений конкретными иностранцами, которая подтверждается собранными доказательствами или их задержанием на месте преступления.

Ключевые слова: *иностранец, правовой статус, расследование, следственная ситуация.*

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FORENSIC TASKS WHILE CRIMINAL PROCEDURE REFORMATION

Reform influence on criminal procedure, in particular, on the significant expansion of competition in pretrial investigation and judicial proceedings, on definition of Criminalistics tasks has been analyzed. Proposals of scientists concerning the allocation of separate subsystems of knowledge and recommendations focused on solving problems by different subjects of criminal proceedings are under investigation in Criminalistics.

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Keywords: criminal proceedings, pre-trial investigation, judicial review, parties, advocacy, competition.

With the adoption in Ukraine of the new Code of Criminal Procedure (2012), in spite of its numerous shortcomings, there was a radical conceptual change in the criminal proceedings. Its essence was manifested not only in the significant expansion of the rights of the lawyer in the criminal process and the legislative use of such concepts as the party of protection and the party of the charge, but also in the actual shift of emphasis in criminal proceedings — now the main tasks of criminal proceedings are resolved directly in court, in which the court not "bound", with the materials of the criminal case drawn up by the investigator and the prosecutor (the prosecution party) during the pre-trial investigation. Although the search for an optimal model of criminal procedural evidence continues[1], today it is possible to state a significant change in the existing paradigm of the criminal process. In this regard, the corrections and traditional views on the tasks of criminalistics in the criminal process, which is the purpose of this article, are subject to.

By 2012, the CPC in Ukraine was in force in 1961, which was subject to a number of changes, but did not substantially change the Soviet principle of criminal proceedings and the legal status of participants[2]. Its essence was determined by the fact that it was created not at all to solve the priority task of protecting human rights and freedoms, but to serve the totalitarian regime, ensuring its ideology and stability. Thus, in a sovereign Ukraine, for a long time, a code was in force in which criminal law enforcement bodies played a major role in criminal proceedings, which carried out a mainly repressive function and protected not the subjective right of a citizen, but the material law of the state. This concerned not only, for example, the protection of the rights of the suspect and defendant (the moment of the involvement of the lawyer and his status), but also the victim. The court was actually suspended from resolving these issues during the preliminary (pre-trial) investigation. Moreover, it was bounded by the criminal case, which was composed by the investigator and the prosecutor and sent to the court after the completion of the preliminary investigation. Consequently, the criminal case actually determined the content of the trial — the court relied on already adopted

[1] Pogoreletskyi M. A. (2015) *Nova kontseptsiia kryminalnoho protsesualnoho dokazuvannia. Visnyk kryminalnoho sudochynstva* [New concept of criminal procedural proof. Bulletin of criminal proceedings]. № 3, p. 63–79 [in Ukrainian]. Shumilo M. Ye. *Poniattia dokaziv u kryminalnomu protsesi: prolehomeny do rozuminnia «nevlovnoho» fenomenu dokazovoho prava* [Concept of evidence in criminal procedure: Preamble to the understanding of the "improper", phenomenon of evidence]. Ibidem, p. 95–104 [in Ukrainian].

[2] Loboyko L. M. (2012) *Reformuvannia kryminalno-protsesualnoho zakonodavstva v Ukraini: zahalni polozhennia i dosudove prova-dzhennia (2006–2011 roky): monohrafiia* [Reform of criminal procedural legislation in Ukraine: general provisions and pre-trial proceedings (2006–2011) : monograph]. Donetsk Law institute, Ministry of Internal Affairs of Ukraine, pp. 6–7 [in Ukrainian].

procedural decisions and protocols of investigative actions. When there were significant gaps, omissions in the system of evidence or errors of preliminary investigation, the court, as a rule, sent the case for additional investigation to eliminate the identified shortcomings, and the acquittal sentences were extremely rare.

Of course, in this order of criminal proceedings, Criminalistics was intended, first of all, to provide a preliminary investigation of crimes with their scientific developments (technical means, tactical methods of carrying out investigative actions, methodical recommendations) and it fulfilled this function. Most clearly, this was reflected in the slogan Criminalistics in the service of the preliminary investigation (a significant time in the 50–60-ies of the last century in the USSR under such a slogan printed a leading forensic edition). This orientation also caused the relevant subjects to apply its recommendations an investigator, a prosecutor, an expert-criminalist (that is, law enforcement officers). Under existing system of legal proceedings, this led, as it were not denied, to a certain "indictment", in the development of Criminalistics. It seems that this explains the research in those days of the problems of the tactics of conducting individual investigative actions related to the misinformation of their participants, the use of "psychological reagent", "investigative tricks", "psychological traps", etc.[1]

Today the situation has changed dramatically: the CPC of Ukraine in 2012 has taken the accent in proving in a court session, where there is a competition of parties that have equal rights to collect and submit evidence to the court and to prove to the court their persuasiveness (Article 22 of the CPC of Ukraine). 22 CPC of Ukraine). Providing the lawyer with the right to collect evidence (including involving experts) during the criminal proceedings in essence means approving the principle of competition not only in court proceedings, but also at the stage of pre-trial investigation. That is, we can talk about the emergence of an alternative party prosecution of "lawyer's investigation."

This innovation of the criminal procedural law also determines a certain review of the tasks of forensic science, which previously traditionally was aimed only at servicing the pre-trial investigation body. It seems that this is precisely the result of the emergence and spread among the part of Russian criminologists of the idea of the allocation of such a new field of criminology, as "criminalistics protection"[2]. Thus, O. Ya. Baev notes that the subject area

[1] Karneeva L. M. (1976) *Sudebnaja jetika i taktika doprosa. Jetika predvaritel'nogo sledstvija* [Judicial ethics and interrogation tactics. Ethics of preliminary investigation]. Volgograd : VSH MVD SSSR, p. 61–62 [in Ukrainian]. Konovalova V. E. (1983) *Sledstvennaja taktika: principy i funkcii* [Sebulov A. M. Interrogation tactics: Principles and functions]. Kiev : VSH MVD SSSR, Pp. 100–109 [in Russian].

[2] Zorin G. A. (2000) *Teoreticheskie osnovy kriminalistiki* [Theoretical bases of Criminalistics]. Minsk : Almafeya, pp. 19–20 [in Russian].

of forensic methodology (as well as all this science) is not only investigation but also criminal investigation of crimes by all professional subjects of such, including lawyers[1]. Consequently, he deals with the subject of criminalistics not only with the activities of the pre-trial investigation body, but also the activities of lawyers in criminal proceedings. In this regard, O. Ya. Baev proposed the allocation in the forensics of an independent scientific subsystem of forensic Advocacy Studies. His thought is rather interesting when he notes that Criminalistics has theoretical purpose for providing crime detection and investigation activities, but at the same time emphasizes that a completely different service role in advocacy: the theoretical provision of a professional counsel for criminal cases. The theoretical provision of the activity of a professional defence counsel in criminal cases. According to O. Ya. Baev its task is not to reveal and investigate crimes, moreover, not even to establish the truth in criminal cases, but to identify the circumstances justifying those accused of committing crimes, and (or) Respect these persons[2]. On this basis, he, proposing the allocation of two subsystems of Criminalistics, actually distinguishes between two mutually exclusive groups of criminological problems.

To assess the proposed conceptual approach, in our opinion, it is expedient to analyse the current legislation, which regulates the activity of a lawyer in criminal proceedings. According to the CPC, a lawyer, as a party to criminal proceedings, who has the right to analyse evidence, carries out two types of advocacy: 1. The protection of a suspect, accused, convicted, acquitted, a person for whom the use of compulsory measures of a medical or educational nature is foreseen, or the issue of their application was resolved, as well as a person in respect of which consideration of the issue of extradition to a foreign state (extradition) is envisaged (Part 1 Article 45 of the CPC of Ukraine). 2. Representation of the victim carried out by a person who, in criminal proceedings, has the right to be a counsel and enjoys the procedural rights of the victim (Article 58 of the CPC of Ukraine). Let's consider the content of these advocacy types in the context of solving tasks for the help of forensic knowledge.

1. The protection of a suspect, accused, convicted, acquitted, a person for whom the use of compulsory measures of a medical or educational nature is foreseen, or the issue of their application was resolved, as well as a person in

[1] Baev O. Ya. (2009) *Osnovy metodiki ugolovnogo presledovanija i professional'noj zashhity ot nego (na primere ugolovno-processual'nogo issledovanija dolzhnostnyh i sluzhebnyh prestuplenij): nauch.-prakt. posobie* [The essentials of the method of criminal prosecution and professional protection against him (on the example of criminal investigation of official and service crimes): Educational and practical textbook]. Moscow : Eksmo, pp. 5 [in Russian].

[2] The same author. *Kriminalisticheskaja advokatologija kak podsistema nauki kriminalistiki. Professional'naja dejatel'nost' advokata kak ob"ekt kriminalisticheskogo issledovanija* (2002) [Forensic Advocacy Studies as a subsystem of science of forensic science. Professional activity of a lawyer as an object of forensic research]. Yekaterinburg : Chaorit, pp. 5–17 [in Russian].

respect of which consideration of the issue of extradition to a foreign state (extradition) is envisaged (Part 1 Article 45 of the CPC of Ukraine). In fact, this refers to the implementation of protection in order to ensure the observance of the rights, freedoms and legitimate interests of the person subject to criminal prosecution. Often in criminal proceedings, this applies to a suspect during a pre-trial investigation and an accused (defendant) at the trial stage.

When protecting a person who is being prosecuted, the lawyer uses forensic knowledge, as rightly states as O. Ya. Baev, not in order to establish the truth in criminal proceedings, but for "... clarifying circumstances that refute suspicion or accusation or exclude criminal liability of a suspect, accused "(Part 1 of Article 47 of the CPC of Ukraine). But here it is necessary to take into account the fact that, while performing its function of protecting a person who is in the status of a suspect, the lawyer may find himself in two situations: a) when the suspect was actually charged with a crime; b) when the suspect did not commit the crime he was accused of.

In the first situation, when the suspect was actually charged with a crime, but he does not recognize his guilt (an experienced lawyer will understand this quickly enough), the lawyer should be guided by Clause 3 of Art. 21 of the Law of Ukraine *On the Bar and Legal Practice*, prohibiting a lawyer from taking a position in a position contrary to the will of the client, unless the lawyer is confident in the lender[1]. In this case, the task of the defender is not in the establishment of truth, but in finding such circumstances that would give grounds for a conclusion at least in the uncertainty of the fault of his client. Such circumstances may include various gaps or procedural mistakes made by the investigators during the pre-trial investigation and which affect the quality of the system of evidence obtained (fullness of the establishment of the circumstances of the crime, affiliation and admissibility of the evidence obtained). For example, the typical mistake of investigators is to capture the most probable version at the initial stage of the investigation and to neglect the testing of other versions (incomplete investigation), which can be used by a lawyer, along with other tactical errors and procedural violations (possibly insignificant) for constructing defence tactics. Of course, in order to find such mistakes, forensic knowledge is required.

Thus, while protecting himself in this situation, the lawyer is already consciously building his activity at the stage of the pre-trial investigation on the assumption of various criminal investigatory mistakes that affect his procedural decisions and make the system of evidence of the prosecution side vulnerable in court proceedings. It seems that taking into account this, in our

[1] *Pro advokaturu ta advokatsku diialnist : Zakon Ukrainy vid 05.07.2012 № 5076-VI. Vidom. Verkhov. Rady* (2013) [On the Bar and Legal Practice Law of Ukraine from5.07.2012 № 5076–VI. Bulletin Verkhovna Rada of Ukraine], № 27. Art: 282.

opinion, the axioms of lawyer's activity to criminalize the development of some "lawyer", recommendations aimed at detecting and using the investigator's mistakes to construct tactics of protection is incorrect.

In a situation where the suspect did not commit an offense charged to him, the main task of the lawyer is not in establishing the truth (this is the task of the pre-trial investigation body), but in clarifying the circumstances that refute suspicion or accusation. Its execution can be carried out by revealing the incompleteness of the investigation conducted, revealing significant forensic and procedural mistakes that influenced the formation of evidence and its evaluation. Usually in certain situations, for example, when a crime is committed by a group of individuals, the activity of a lawyer of one of the suspects may be aimed at proving the innocence of his client by paying attention to circumstances indicating the fault of another person. But here, in our opinion, the situation arises in the conflict of interests of several lawyers who protect several different suspects in a single criminal proceeding, which should be posted on the basis of ethics of the lawyer. In particular, according to Art. 8 Rules of legal ethics, the lawyer, in compliance with the principle of legality, must, in his professional activities, proceed from the benefit of the client's interests[1].

2. Representation of the victim carried out by a person who, in criminal proceedings, has the right to be a counsel and enjoys the procedural rights of the victim (Article 58 of the CPC of Ukraine). This kind of advocacy is significantly different from the one previously considered. First of all, it should be noted that the lawyer in this case speaks to the prosecution party, since the victim refers specifically to this party (paragraph 19, part 1, Article 3 of the CPC of Ukraine). Thus, the lawyer carries out joint tasks with the body of pre-trial investigation and the prosecutor, which are defined by Art. 2 CPC of Ukraine, in particular to ensure a prompt, complete and impartial investigation. But the lawyer performs this task, first of all, in protecting the rights, freedoms and legitimate interests of the victim (restoration of violated rights and obtaining compensation for moral, physical or property damage caused by the guilty person).

Thus, the lawyer, representing the interests of the victim in a criminal proceeding, directs his efforts to establish the truth. And, therefore, his activities along with the activities of the investigator acquires a cognitive character, in which forensic knowledge is essential. To do this, the lawyer, speaking a representative of the victim and using his procedural rights in accordance with Art. 56 CPC of Ukraine, in particular the right to: provide

[1] *Pravvla advokatskoi etvkv (zatverdzheni Zvitno-vvbornvm zizdom advokativ Ukrainv* [Rules of lawyer's ethics (approved by the Reporting and Election Congress of Lawyers of Ukraine] (09.06.2017). URL: http://zakon4.rada.gov.ua/rada/show/n0001891–17/paran4#n4 (Date accessed: 09.04.2018) [in Ukrainian].

evidence to the investigator, prosecutor, investigating judge, court; to challenge decisions, actions or omissions of the investigator, prosecutor, investigator of a judge, court; to make a throat and a petition; get acquainted with the materials of criminal proceedings, which directly concern the perpetrator of the crime victim.

As the investigative, judicial and advocacy practice shows, such a type of lawyer's activity as the victim's representation is characteristic of complex criminal proceedings, in particular as regards man-made disasters caused by the deaths of people (industrial accidents, sea, river and aircrafts), in which the victim is fairly large group of people. A striking example of the lawyer's representation of victims with the use of forensic and other specialist knowledge is the criminal proceedings regarding the death of the Kursk atomic submarine in Russia in 2000, detailed in the book by Russian lawyer B. A. Kuznetsov "It's drowned...". The truth about Kursk hidden by Putin and Ustinov[1]. According to the author, the criminal case about the death of the submarine and its crew was illegally closed on the basis of counterfeit (falsified) facts by commission forensic and acoustic and phonographic examinations, which, in violation of the current legislation, were conducted incompletely, using non-scientific provisions and with access to the limits of competence of experts on particular issues[2]. The author also draws attention to the failure to conduct a series of investigative actions, in particular questioning of witnesses and expertise aimed at establishing certain circumstances of the preparation and conduct of naval exercises involving the submarine "Kursk", carrying out a rescue operation following an accident which could have been causally related The death of an underwater cruiser and its crew.

A fairly paradoxical situation may arise here, when the body of pre-trial investigation for certain reasons (corruption, political) is not interested in establishing the truth in a criminal proceeding. Therefore, individual officials resort to artificial interference in the conduct of investigative and investigative actions, manipulation of facts and their missjudgment with the use of special knowledge, including forensics. It seems that this can be evaluated as a manifestation of counteraction to an investigation (one of its forms), having in mind the problem of criminal proceedings, the definition of Art. 2 CPC of Ukraine.

In this situation, the lawyer, representing the interests of the victim in a criminal proceeding and formally speaking with the prosecuting authority on the part of the prosecution, actually exercises the function of controlling the

[1] Kuznetsov B. (2013) *«Ona utonula...». Pravda o «Kurske», kotoruju skryvajut Putin i Ustinov. Izd. 2-e, pererab. i dopoln.* ["It's drowned...", The truth about Kursk, which is hidden by Putin and Ustinov. 2nd ed. revised supplemented]. Tallinn : KPD, p. 674. URL: http://imwerden.de/pdf/kuznetsov_ona_utonula_pravda_o_kurske_2013.pdf (Date accessed 28.08.2018) [in Russian].

[2] Ibidem, p. 117–132173–184.

completeness of the investigation and its quality, taking care of the rights, freedoms and interests of the victim (several victims). It seems that the lawyer here is a full and equal subject of cognition and gathering evidence, which is authorized to use forensic knowledge in full, as well as the body of pre-trial investigation. Therefore, in this case, there is no need to develop any specific forensic provisions and recommendations for a lawyer in a separate subsystem of forensic science, called “forensic advocacy”.

Thus, having considered two types of advocacy in criminal proceedings, we can conclude that, in the first type of advocacy, it is only a means of obtaining arguments for the construction of a line of defense and is carried out, first of all, by finding violations or non-compliance by the body of pre-trial investigation norms criminal procedural law, unskilled use of forensic means, which raises the question of the evidence obtained in the prosecution. Thus, the lawyer uses certain scientific regulations and recommendations of criminalistics to determine the omissions of the pre-trial investigation authority, which gives grounds for refuting the arguments of the party of the charge and is undoubtedly interpreted in favor of the defendant (even when the lawyer knows about his guilt in the crime). It seems absurd to determine the tasks of forensic science to develop certain recommendations, for example, on the tactics of conduct and actions of a lawyer during a pre-trial investigation in order to induce an inexperienced investigator to make mistakes during investigative and investigative actions. This would actually mean the development of recommendations to counter the investigation and obstruct the establishment of the truth, and thus the violation of the rights of other participants in the criminal proceedings.

In the second type of advocacy (Representation of the victim), the lawyer has the task of establishing the truth in criminal proceedings, as this involves the restoration of violated rights, freedoms and the victim's interests. It should be emphasized that at this time the lawyer speaks to the prosecution side and formally joins the defense party — a lawyer of the suspect. It seems that this creates the optimal relationship in criminal proceedings — a peculiar system of counterbalance of interests, which, while exercising the powers of the parties, ensure objectivity and impartiality in pre-trial investigation and judicial review.

It should be noted that often in jurisprudence the term “lawyer's investigation”, is used, which in some way gives grounds to the creation of “forensic advocacy”. It seems that the mistake in this matter lies in the fact that the lawyer's right to independently collect evidence cannot be considered as a separate independent “lawyer”, investigation of a crime. The fact is that, within the framework of criminal proceedings, each of its participants can conduct its own “independent investigation” (for example, one can speak of an imagination of the investigated event, consisting of an employee of the

operational unit, investigator, prosecutor, lawyers, victims, witnesses), but formally a point is put in the court decision. And hence the use of forensic knowledge can each of these subjects, but this does not give any reason for the division of forensics into a "subsystem", depending on the subjects that use this knowledge.

Summarizing the above, it should be emphasized that in the conditions of reforming the criminal process, its democratization and the significant expansion of the rights of its participants, in particular the parties of defense, the tasks of criminalistics should not be determined in the interests of one or another side. As one of the founders of this science, Hans Gross noted, the emergence of criminology was dictated by the need for a forensic investigator in specialist knowledge developed to address the specific tasks of the preliminary investigation of crimes. But this knowledge is intended not only for the forensic investigator, but also for anyone who takes an active part in establishing the offense and his culprit[1]. Therefore, the basis for determining the tasks of forensic science is the awareness that this science is not in the service of a certain subject of criminal proceedings, but in the service of establishing the truth, which is determined by the competition of the parties and reflected in the decision of the court. It is obvious that when using forensic means and techniques as a cognitive tool, it is necessary to take into account that the evidence obtained as a result of this (and the procedure for obtaining them) will be thoroughly investigated and evaluated at the trial by subjects with opposite objectives in terms of belonging and admissibility of these proofs. It seems that, taking into account adversarial nature of both parties in the trial and in the pre-trial investigation, certain scientific provisions and practical recommendations of forensic sciences, which were set forth in the scientific and educational special literature of past years, require some correction.

ЗАВДАННЯ КРИМІНАЛІСТИКИ В УМОВАХ РЕФОРМУВАННЯ КРИМІНАЛЬНОГО ПРОЦЕСУ

А. Ф. Волобуєв*, *М. В. Даньшин

Проаналізовано вплив реформування кримінального процесу, зокрема суттєвого розширення змагальності в досудовому розслідуванні й судовому розгляді, на визначення завдань криміналістики. Досліджено пропозиції вчених щодо виділення в криміналістиці окремих підсистем знань і рекомендацій, зорієнтованих на вирішення завдань різними суб'єктами кримінального провадження.

Ключові слова: завдання кримінального провадження, досудове розслідування, судовий розгляд, сторони, адвокатська діяльність, змагальність.

[1] Hans Gross. (2002) *Rukovodstvo dlja sudebnyh sledovatelej kak sistema kriminalistiki* [Criminal Investigations, a Practical Textbook. New edition reprinted from 1908], Moscow : LeksEst, p. 1–5 [in Russian].

ЗАДАЧИ КРИМИНАЛИСТИКИ В УСЛОВИЯХ РЕФОРМИРОВАНИЯ УГОЛОВНОГО ПРОЦЕССА

А. Ф. Волобуев*, *М. В. Даньшин

Исследованы отдельные тенденции концептуальных изменений в системе современного уголовного производства относительно использования криминалистических средств и приемов как познавательного инструмента в уголовном процессе Украины. Авторами проанализировано влияние реформирования отечественного криминального процессуального законодательства на определение целей и задач науки криминалистики, в частности акцентируется внимание на существенном расширении состязательности в досудебном расследовании и судебном разбирательстве. Проанализированы предложения некоторых ученых-криминалистов относительно выделения в современной криминалистике отдельных подсистем знаний и рекомендаций, сориентированных на разных субъектов уголовного производства. Представлена характеристика концептуального подхода к выделению в криминалистике «криминалистической адвокатологии». В связи с этим рассмотрены виды адвокатской деятельности в контексте решаемых задач с помощью криминалистических знаний. Отмечено, что адвокат во время выполнения своих профессиональных обязанностей — осуществления защиты лица, которое подвергается уголовному преследованию, или осуществления представительства пострадавшего, действительно использует криминалистические знания, но с разной целью. В последнем случае цель и объем используемых адвокатом криминалистических знаний фактически совпадают с целью и объемом знаний органа досудебного расследования. Деятельность адвоката по представительству в уголовном производстве интересов пострадавшего проиллюстрирована материалами расследования техногенной катастрофы с гибелью людей. На этом фоне сформулирован вывод, касающийся противоречивости и невзвешенности предложения относительно формирования «криминалистической адкатологии» как подсистемы криминалистики. Также на основании проведенного анализа предложено авторское видение современной интеграции криминалистических и уголовных процессуальных знаний. Резюмируется, что использовать криминалистические знания может каждый из участников уголовного производства в том объеме, который он считает нужным для достижения своей цели, однако это не дает оснований для деления криминалистики на специфические «подсистемы» в зависимости от субъектов ее использования. Подчеркнуто, что, учитывая коренное изменение отечественного уголовного процесса, ныне нуждаются в пересмотре или коррекции отдельные научные положения и практические рекомендации криминалистики.

Ключевые слова: задачи уголовного производства, досудебное расследование, судебное разбирательство, стороны, адвокатская деятельность, состязательность.

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SUBJECT MATTER OF CRIMINALISTICS: STAGES OF FORMATION AND MODERN APPROACHES

Genesis of scientific approaches to the definition of Criminalistics subject, stages of development of ideas about are proposed. The transformation of the subject of criminalistics at the present stage of the reform of the criminal justice bodies of Ukraine is established. It is concluded that the interpretation of forensic science and its subject reflects the state of forensic science in specific periods and the immediate prospects for its development.

Keywords: criminalistics, subject matter of criminalistics, regularities, studying criminology, stages of development of the subject of criminalistics.

The correct definition of the subject of science is the prerequisite for conducting research, and therefore a constructive analysis of the theoretical positions on its subject must be one of the tasks of any field of scientific knowledge.

Substantial changes in the criminal proceedings that took place after the entry into force of the Criminal Procedure Code of Ukraine, the adoption of the laws of Ukraine "On the National Anti-Corruption Bureau of Ukraine", "On the National Police", "On the State Bureau of Investigations", and others, the reform of the Ministry of Internal Affairs, the prosecutor's office, judicial reform led before the change of powers of operational units, bodies of pre-trial investigation, expert institutions of law-enforcement bodies, their organizational-structural changes. This led to the emergence of completely new principles, rules and regulations for investigating criminal offenses, their trial and the prevention of crimes. Such changes could not have affected the criminology.

Consequently, nowadays the transformation of the subject of domestic Criminalistics as a modern science, aimed at ensuring the practice of investigating crimes by effective recommendations, and authorized agents to offer forensic knowledge of the proper level. Formation periodization of the of ideas about the subject of Criminalistics needs to be improved and existing in scientific sources.

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The outline of approaches to the definition of Criminalistics subject matter with the coverage of the historical stages of their formation and the establishment of modern theoretical ideas about the subject of forensic science is the purpose of the article.

Subject matter of Criminalistics is multifaceted and complex. Legal literature offers different definitions: as a science of crime investigation; science of crime detection; science about a set of technical means, tactical methods and methodical recommendations. Currently, criminalistics is interpreted as a science of technology and means of practical study of judges in criminal proceedings. However, all these definitions narrow down the real subject of criminology and the laws that study this science.

In 2013 M. V. Danshin, monographically studied the place of Criminalistics in the system of scientific knowledge, sets the stages of development of representations of the subject of Criminalistics. The first stage is "orientational". It is associated with the works of Hans Gross who interpreted Criminalistics as a system of knowledge about the means and techniques of applying the achievements of natural and technical sciences to the investigation of crimes. At this stage, other scholars have contributed to the formation of the scientific foundations of criminology: A. Bertillion, X. Vuchetich, E. Henry, V. Herschel, G. Folds, L. Yageman, and others. However, it is Hans Gross systematized the available knowledge of forensic science and created a theoretical basis for the formation of an independent branch of scientific knowledge. During 1903–1925, the work of Y. F. Burinsky, V. I. Lebedev, S. M. Tregubov and others formed on the theoretical ideas about the subject of criminalistics. Criminalistics was considered an applied technical discipline, and its subject covered methods and techniques for the application of other sciences during the disclosure and investigation of crimes. The second stage of evolution of approaches to interpretation of the subject of Criminalistics, M. V. Danshin called "synthesizing.", Thus, from the 1920's to the content of Criminalistics was attributed knowledge of techniques, methods of committing crimes and the mechanism of committing crimes. The third stage is "systemic". From the 1960's a fundamentally new approach to the definition of criminology was developed by R. S. Belkin and Yu. I. Krasnobayev, who formulated the definition of this science through the prism of the laws that it is studying[1].

The scientist proposed several concepts:

[1] Danshin M. B. (2013) *Kriminalistika XXI stolittja: misce u sistemi naukovogo znannja: monografija* [Criminalistics of the XXI century: role in the system of scientific knowledge : monograph]. Kharkiv : V. N. Karazin Kharkiv National University, pp. 53–66 [in Russian]. At the same time, V. S. Kuzmichov advocated a view on the development of the subject of criminology through the prism of the history of the formation of science.

1. Historical and traditional as a science of methods, means, methods of disclosure, investigation and prevention of crimes (O. M. Vasiliev, A. I. Wienberg, I. F. Panteleev, S. M. Tregubov, B. M. Chaver and others);

2. Contemporary-classical means the science of the mechanism regularities of crime committing, its reflection, tracing and appropriate methods, means, methods of detection, extraction, investigation and application of evidence in order to fulfill the tasks of criminal justice (V. P. Bakhin, R. S. Belkin, V. Ya. Koldin, V. Yu. Shepitko, M. P. Yablokov, and others);

3. Perspective-new means that Criminalistics is an interdisciplinary legal applied science about the laws of the emergence of information in relation to any legal phenomenon in a society that needs to be found, collected, investigated and used (with the help of technical means, tactical methods and techniques) for the purpose of efficient performance of tasks, of legal significance (O. Ya. Baev, V. G. Goncharenko, B. C. Kuzmichov, etc.)[1].

Exploring the genesis of representations about the subject of Criminalistics, V. A. Zhuravel notes about the existence and coexistence of a number of paradigms focused on the study of its subject: a) pragmatic concept that according to Criminalistics is a science of methods and methods of disclosure, investigation and prevention of crimes; b) the proof-theoretical concept as a consequence of the intensive development of theoretical and methodological foundations of science and the formation of certain ideas about the laws used in the investigation of crimes (the emergence of this concept is associated with the suggestion of R. S. Belkin to treat Criminalistics as a science of certain laws); c) informational and cognitive conception, which is a generalization and further improvement of the theoretical and evidence concept, according to which the subject of Criminalistics is the regularity of the movement of criminally relevant information and methods of disclosure, investigation and prevention of crimes (V. Ya. Koldin); d) study the concept that according to criminology is a science about technology and means of practical investigation (search and cognitive activity) in criminal proceedings (V. O. Obraztsov)[2].

In our opinion, the optimization is the periodization of the development of representations of the subject of criminalistics on the basis of the comparative legal method, which is defined as a set of methods for identifying general and specific laws of the origin, development, functioning of legal

[1] Kuzmichov V.S. (2009) *Golovolomka kriminalistiki. Kriminalistika u protidiï zlochinnosti: tezi dop. nauk.-prakt. konf.* [Criminalistics puzzle. Criminalistics in combating crime: Doctoral thesis, Conf.] (Kyev, October 2009). Kyev, pp. 61–62 [in Russian].

[2] Zhuravel V. A. (2016) *Predmet kryminalistyky: henezys ta suchasnyi stan. Vybrani tvory* [Subject matter of Criminalistics: Genesis and current state Selections]. Kharkiv : Apostle, pp. 5–6 [in Russian].

systems (their elements) by comparing them;[1] and its type — the historical-comparative method, which makes it possible to take into account their changes in time when comparing objects.[2]

Evolution of views on the subject of criminology has affected the process of formulating its definition. Contemporary concepts about the subject as well noted V. A. Zhuravel, are directly reflected in the proposed definitions of the actual science of Criminalistics.[3]

In this view, we will analyze the specific definitions of Criminalistics and its subject in the context of historical laws of development of this science, using methods of comparative law. The founder of a new science of disclosure and investigation of crimes Hans Gross argued that criminalistics begins only where criminal law stops its work:

material criminal law has the subject of studying the criminal act and punishment, formal criminal law (the process) covers the rules of the application of substantive law. However, what exactly is the crime committed; how to explore these methods and disclose them, which were the motives, the whole acts: answers to these questions do not contain any criminal law or process. The above is a subject of criminalistics. Forensic science is a doctrine of the real aspect of phenomena constituting the content of criminal law. Its subject matter is the study of material evidence, acts or phenomena that are elements of a criminal case; character, psychological peculiarities, habits and methods of activity of persons involved in the criminal process (accused, victims, witnesses, experts and judges)[4].

This was the subject of criminalistics at the time of the emergence of this science.

In view of the lack of precise definition of the initial stage of development of representations about the subject of criminalistics in the scientific sources, which is undoubtedly related to the justification of the new science in the works of G. Gross, it is expedient to study the relevant issue in more detail. The study of Hans Gross's researches in the field of Criminalistics published during the period of 1893–1914,[5] gives us reason to assert that they

[1] Holiak L. V., Mtsko A. S., Tyurina O. V. (2004) *Porivnialne pravoznavstvo*: kurs lektsii [Comparative Law: cycle of lectures]. Kyiv : IAPM, p. 13 [in Ukrainian].

[2] Sheiko V. M., Kushnarenko N. M. (2006) *Orhanizatsiia ta metodyka naukovo-doslidnytskoi diialnosti : pidruchnyk* [Organization and methods of research : textbook]. Kyiv : Znanie, p. 60 [in Ukrainian].

[3] Zhuravel V. A. Papers mentioned above, p. 10.

[4] Hans Gross (1908) *Rukovodstvo dlia sudebnykh sledovatelei kak systema krymynalystyky* [Criminal Investigations, a Practical Textbook. Translated from German by L. Dudkin, B. Ziller]. Saint Petersburg : Merkushev M., p. 8 [in Russian].

[5] Hans Gross (2015) *Pratsi vchenoho ta literatura pro noho z fondiv Naukovoi biblioteky Chernivetskoho nats. un-tu im. Yuriia Fedkovycha: do 100-richchia z dnia smerti: bibliohr. pokazhchyk/uklad : S. I. Nezhurbida ta in.* [Scientific researches of the scientist and literature about him from the funds of the Scientific Library of Chernivtsi National University, named after Yuri Fedkovych: to the 100th anniversary of the day of death: bibliographer index: S. I. Negurbida and others]. Chernivtsi : Knigi, p. 23–45 [in Russian].

developed provisions on Criminalistics, its subject and place in the system of criminal law sciences.

In particular, in the preface to the third and fourth editions of the "Guidelines for Forensic Investigators as a Criminalistics System", he noted that they were a complete re-engineering of previous publications.[1]. In the scientific research performed in 1899 it was noted that criminology has recently acquired the value of independent science, with a strictly limited branch and detailed processing of its departments[2]. In the edition of Hans Gross performed in 1904 Criminalistics, he noted that in the science of Criminalistics took a different position than originally. As a subject of teaching, it can no longer be isolated and should be put on a broader basis. Along with her put forward the related scientific disciplines that deserve unconditional attention: criminal anthropology, criminal psychology, criminal sociology and criminal statistics. All of them are so closely linked to Criminalistics that none of them can develop independently. Thus, there was a need for the named sciences, including forensic science, to create one independent from the closely interconnected parts of the group of sciences[3]. Accordingly, in this scientific publication, views on the subject of criminology have been changed, which has been expanded through association with a number of special scientific disciplines.

A. Niecheforo, *Scientific Police and Scientific and Legal Investigation* (1907), R. Reiss *Forensic photography* (1911), *Scientific Technique of Investigation of Crimes* (1912), and others. For example, RA Reiss noted that the "scientific", or "technical police", is studying the nature and form of the activities of criminals and the application of scientific research methods to the disclosure of crimes[4].

Thus, in our opinion, the first stage of the development of ideas about the subject of criminalistics should be considered the end of the nineteenth and the beginning of the twentieth century (1893–1914).

The implementation of the Western European rules of forensic science in the Russian Empire was accompanied by the fruitful functioning of the offices of the scientific and judicial expertise in St. Petersburg (from 1912), Moscow (from 1913), Kiev and Odessa (from 1914), in which to fulfill the tasks of disclosure crimes used the achievements of natural, technical and

[1] Hans Gross. (1908) *Rukovodstvo dlia sudebnыkh sledovatelei kak systema krymynalystyky; per. s nem. L. Dudkyna y B. Zyllera* [Criminal Investigations, a Practical Textbook. Translated from German by L. Dudkin, B. Ziller]. Saint Petersburg : Merkushev M., p. VII, XV–XVII [in Russian].

[2] Ibidem. S. VII.

[3] Gross H. Handbuch fur Untersuchungsrichter als System der Kriminalistik: in 2 Bd. 4 verm. Aufl. Munchen: J. Schweitzer Verl. 1904, p. At the same time, other Western European researchers in their publications expressed their views on a new science on the application of technical knowledge and methods of natural sciences in the investigation of crimes, namely: A. Weingart, Criminal tactics. Crime Disclosure Guide (1904).

[4] Reiss R. A. (1912) *Nauchnaja tehnika rassledovanija prestuplenij / pod red. S. N. Trequbova* [Scientific technique of investigation of crimes / edited by S. N. Tregubov]. Saint Petersburg : Senatskaya Tipographia, p. 206 [in Russian].

medical sciences, for example, photographic techniques, microscopic research, forensic medical methods, etc. This was reflected in the definitions of the subject of criminology of that period. Thus, the Russian researcher S. M Tregubov in 1915 considered the subject of criminology to study the best ways and methods of applying natural sciences and technical knowledge to the investigation of crimes and the establishment of the perpetrator[1]. The researcher called the new science "criminal technique", which corresponded to the idea of its essence.

After the revolutionary events in the Russian Empire in 1917, G. Yu. Mannes was one of the first to publicize the position on the subject of criminalistics, according to which, firstly, the ways of committing crimes, professional features and the lives of offenders, and secondly, the methods of investigation of crimes, including the identification of offenders.

In accordance with the expanded definition of Criminalistics subject matter proposed in 1923–1925 by I. M. Yakimov, Criminalistics studies the most appropriate methods and techniques for the application of natural, medical and technical sciences to the investigation of crimes, as well as the physical and moral components of the offender's personality, with the aim to help justice in revealing material truth in a criminal case[2].

At this time, Ukrainian experts made efforts to define the subject of criminology. V. M. Natanson argued that the purpose of the technique of the investigation of crimes (i.e., criminalistics) is to study ways to solve crimes, to develop methods for the collection and consolidation of evidence of guilt. The work of collecting and attaching to the court proofs of guilt, which is the cornerstone of the prosecution for obtaining practical results, is the subject of criminalistics[3]. Criminal technology, noted M. D. Voronovsky, involves the subject of a method of registration of criminals, techniques of conducting surveys and methods of studying material evidence[4].

Consequently, Criminalistics was considered a science of disclosure of crimes through forensic technology. Criminalistics had to study criminals, crimes, methods of their deeds and methods of disclosure, one of the tasks of which is to develop the most rational ways to prevent and neutralize crimes

[1] Tregubov S. N. (1915) *Osnovy ugolovnoj tehniki. Nauchno-tehnicheskie priemy rassledovanija prestuplenij* [The essentials of Criminal Technique. Scientific and technological methods of crime investigation]. Saint Petersburg : Pravo, p. 14 [in Russian].

[2] Yakimov I. N. (1923) *Nauka raskrytija prestuplenij. Raboche-krest'janskaja justicija* [Science of crime investigation. Workers' and Peasants' justice]. Issue 2–3, p. 47–49; The same author [in Ukrainian] (1925) *Kriminalistika. Rukovodstvo po ugolovnoj tehnike i taktike* [Criminalistics. Guide on Criminal Technique and tactics]. Moscow : Ed. NKVD of Russian SFSR, p. 3 [in Russian].

[3] Natanson V. M. (1925) *Osnovy tehniki rassledovanija prestuplenija v konspektivnom izlozhenii* [The essentials of crime investigation techniques in a concise statement]. Kharkov : Press: VUSPS named after P. Ivanov, p. 6–7 [in Russian].

[4] Voronovsky N. D. (1931) *Ugolovnaja tehnika. Nachal'nyj kurs. Prakticheskoe rukovodstvo dlja rabotnikov organov rassledovanij* [Criminal technique. Initial course. Practical guide for investigators]. Moscow : Ed. NKVD of Russian SFSR, p. 5 [in Russian].

that are being prepared. Therefore, at the stage of the formation of Soviet criminology widespread was the view of it as a technical or natural science. According to R. S. Belkin, this is due to the attempt to separate from the classical legal criminal-procedural science. Focusing on the applied technical nature of Criminalistics, the supporters of this concept sought to prove the need to delineate criminological and procedural knowledge[1]. In the first Soviet textbook on Criminalistics published in 1935, it was defined as a science of crime investigation, covering criminal technology, criminal tactics and a separate methodology[2].

In the USSR, the definition of Criminalistics and its subject matter proposed in 1940 by B. M. Chaver, according to which criminology studies techniques and methods of committing crimes, the traces remaining as a result of committing criminal acts or those left by the criminal, are given in the natural sciences and engineering sciences from the purpose of adapting all this to the task of investigating crimes. Criminalistics is a science of techniques and methods for detecting and researching evidence used to detect crimes, detect and identify criminals[3].

A. I. Wienberg summarized the existing views on Criminalistics and in the textbook of 1950 he defined it as a science of technical and tactical methods and means of detecting, collecting, fixing and studying judicial evidence used to disclose crimes against the Soviet system and the established The Soviet state of law and order, the discovery of guilty and the search for ways to prevent crime[4]. That is, the crime prevention tasks were assigned crime prevention. Proposed definition of Criminalistics subject matter was shared by S. P. Mitrichiev, A. M. Vasiliev, A. O. Eisman and others.

Since the end of 1960's, when the general theory of Criminalistics began to emerge, it became apparent that the traditional definition of the subject of criminology needed to be revised, and the discussions resumed. The determining factor was the knowledge of the laws that operate in the field of criminal justice, on the basis of the theoretical generalization of the accumulated knowledge. Finally, R. S. Belkin and Yu. I. Krasnobayev proposed a fundamentally new definition of Criminalistics subject matter through the prism of the laws that study science. In the magazine *Jurisprudence* in 1967 their article: *On the subject of Soviet Criminalistics*

[1] *Kriminalistika : uchebnik* (1999) [Criminalistics : textbook] / by T. V. Averianov, R. S. Belkin, Yu. G. Koruhov, E R. Rossinskaia. Moscow : Norma, p. 8 [in Russian].

[2] *Kriminalistika : uchebnik: v 2 kn. / pod red. A. Ja. Vyshinskogo* (1935) [Criminalistics: manual: in 2 books / ed. by A. Ya. Vishinsky]. Moscow : OGIZ, book 1: Techniques and tactics of criminal investigation, p. 6 [in Russian].

[3] *Kriminalistika : uchebnik / pod red. B. M. Shavera, A. I. Vinberga* (1940) [Criminalistics: manual / edited by B. M. Chaver, A. I. Vinberg]. Moscow : Legal Edition of the Narkomiust of the USSR, p. 3 [in Russian].

[4] *Kriminalistika : uchebnik / pod red. A. I. Vinberga, S. P. Mitricheva* (1950) [Criminalistics: manual /edited by A. I. Vinberg, S. P. Mitrichev]. Moscow : Gosyurizdat, p. 4 [in Russian].

was published, in which criminology was considered a science of the laws of the origin, collection, study and use of evidence and knowledge-based methods and methods for judicial investigation and crime prevention[1].

A new definition of R. S. Belkin and Yu. I. Krasnobayev was actively discussed at all-Union conferences of criminologists: in Kharkov (1969), Sverdlovsk (1970), Moscow (1972), Minsk (1973). Thus, at a conference in Kharkiv, O. M. Vasiliev advocated that Criminalistics remains a science of special techniques and tools developed on the basis of natural and technical sciences used in criminal proceedings for the organization of systematic investigation of crimes, the correct use of cognitive techniques, and as well as crime prevention[2]. However, majority of participants in the next conference recognized that the new definition of Criminalistics subject matter corresponding to the realities of time[3].

Later scientific discussions on Criminalistics subject matter concerned, mainly, the refinement of the list of laws that study this science, or the legitimacy of the use of certain terms.

In 1980 V. G. Goncharenko noted that criminology is a science about the laws of information about a crime, a system of technical means, tactical methods and methods of collecting, researching and using this information for the purpose of the most effective implementation of counteraction to crime[4]. In 1999, V. P. Bakhin wrote that Criminalistics is a science about the patterns of tracing and the means of identifying, collecting, researching and using information for the purpose of disclosing and investigating crimes[5]. In 2001 V. Yu. Shepitko proposed the Criminalistics definition as a science of the regularities of criminal activity and its reflection in the sources of information that are the basis for the development of tools, techniques and methods for the collection, study, evaluation and use of evidence for the purpose of disclosure, investigation, judicial review and prevention of crime[6].

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[1] Belkin R. S. Korukhov Yu. I. (1967) *O predmete sovetskoj kriminalistiki. Pravovedenie* [About the subject matter of Soviet Criminalistics. Jurisprudence]. № 4, p. 90–94 [in Russian].

[2] *Problemy kriminalistiki: tezisy dokladov nauch. konf.* (1969) [Issues of Criminalistics: theses of scientific reports Conf.] Kharkov, May 1969 Moscow, p. 8 [in Russian].

[3] Belkin R. S. (1999) *Istorija otechestvennoj kriminalistiki* [History of domestic Criminalistics]. Moscow : NORMA, p. 209 [in Russian].

[4] Goncharenko V. I. (1980) *Ispol'zovanie dannyh estestvennyh i tehnicheskih nauk v ugolovnom sudoproizvodstve: metodologicheskie vopros*y [Use of data of natural and technical sciences in criminal proceedings: methodological issues]. Kiev : Vyshcha Shkola, p. 54 [in Ukrainian].

[5] Bakhin V. (1999) *Predmet nauki kriminalistiki: lekcija* [Subject matter of forensic science: lecture]. Kyev, p. 8 [in Ukrainian].

[6] Shepitko V. Yu. 2001) *Pryroda i predmet vyvchennia kryminalistyky v systemi naukovoho znannia. Teoriia ta praktyka sudovoi ekspertyzy i kryminalistyky : zb. nauk.-prakt. materialiv (do 55-richchia vyd. roboty S. M. Potapova «Vvedenye v krymynalystyku»*) [Nature and research subject matter of Criminalistics in the system of scientific knowledge. Theory and Practice of Forensic Science and Criminalistics Collection of scientific papers (to the 55th anniversary of the work of S. M. Potapov "introduction to Criminalistics"]. Kharkiv : Pravo, p. 13 [in Ukrainian].

In modern Ukrainian forensics publications, forensic science, for the most part, involves a classical definition from the standpoint of a two-sided object[1]. For example, A. F. Volobuyev argues that criminology is a science that studies the patterns of the mechanism of committing crimes, the patterns of gathering evidence and based on them and on the basis of the use of advances in various scientific fields forms theoretical positions and practical recommendations for methods, methods and means of investigation crimes[2]. Opinion of A. F. Volobuev is shared by K. O. Chaplinsky[3]. M. V. Danshin examines Criminalistics in a single semantic context with other legal sciences in the criminal legal cycle, and defines it as a science about a system of principles and methods for cognition of the mechanism of criminal activity and the activity for investigation and disclosure of crimes[4].

In the context of the search and cognitive activity of authorized agents of investigation, criminalistics is determined by V. V. Tishchenko, namely: M. K. is a science that studies the content and structure of the mechanism of criminal acts, the patterns of their reflection in the material environment, as well as the peculiarities of search and cognitive investigative activity, developing technologies, methods, techniques and means of disclosing and investigating crimes[5].

V. G. Goncharenko argues that criminology has gradually and naturally developed from the applied, in relation to criminal justice, the scientific and practical field in the multidirectional synthetic applied scientific branch, which ensures the optimal influence of the right to life of society, first of all, through the adoption by competent subjects of scientifically substantiated adequate legal decisions. Consequently, the scientist notes that Criminalistics is a science about the laws of the emergence of evidence of a crime or any phenomenon in a society that requires a legal settlement by means of evidence, a system of technical means, tactical techniques and methods of collecting, researching and using this information in order to the most effective implementation of the tasks of operational search, investigation, judicial review, advocacy and the establishment of facts of any legal significance in any field of human activity[6].

[1] Markus V. O. *Kryminalistyka: navch. posib.* [Criminalistics : tutorial]. Kyiv : Condor, 2007. P. 558, Saltevsky M.V. (2008) *Kryminalistyka (u suchasnomu vykladi) : pidruchnyk* [Criminalistics (in modern edition) : textbook]. Kyiv : Condor, p. 588; Sheremet A. P. (2009) *Kryminalistyka: navch. posib.* [Criminalistics: Tutorial, 2nd ed.]. Kyiv : Center sci. lit., p. 472 [in Ukrainian].

[2] Bernaz V. D., Birukov V. V., Volobuev A. F. (2011) *Kryminalistyka : pidruchnyk* [Criminalistics : textbook]. Kharkiv : KhNUIA, p. 19 [in Ukrainian].

[3] *Kryminalistyka : pidruchnyk* (2014) [Criminalistics : textbook]. O. Chaplynskyi, O. V. Luskatov, I. V. Pyrih and others. Dnipropetrovsk : Lira, LTD, p. 19 [in Ukrainian].

[4] Danshin M. V. Papers mentioned above, p. 75 [in Ukrainian].

[5] *Kryminalistyka : pidruchnyk* (2017) [Criminalistics : manual] edited by V. V. Tischenko. Odessa : Gelvetika, p. 15 [in Ukrainian].

[6] Ibidem, p. 29.

A. V. Ishchenko notes that in modern conditions Criminalistics can be defined as a system of knowledge about the laws of formation (formation, occurrence), identification (setting), fixation, seizure, study, evaluation and use of information suitable for verification or establishment of any kind. which facts, events, phenomena, as well as the development of methods, methods, techniques, technologies, tools, materials, devices and their complexes and other means of optimizing the work with such information based on the known patterns of techniques[1].

Consequently, in view of the widening of the limits of the use of forensic knowledge in the modern world, when the recommendations of forensic science are used in various spheres of social activity outside of criminal procedural relations, new definitions of criminology and its subject matter are formulated in scientific sources. Therefore, in defining the subject of science, we propose the possibility of using the provisions of forensic science in the resolution of criminal, civil, administrative, economic, customs, fiscal and other offenses and for establishing legal facts.

It should also focus on the use of terms and concepts in the field of Criminalistics. The conceptual apparatus of forensic science has close ties and the conditionality of the terminology of legislation. In particular, the current CPC of Ukraine, unlike the CCP in 1960, does not use the concept of "disclosure of crimes", which is considered by scientists as the activity of establishing, with the help of, mainly operational search methods, the perpetrator of the crime and is associated with a message to it suspicions (indictment — in accordance with the CPC of 1960) or conviction (taking into account the final decision in the appellate courts). The Criminal Procedural Code of Ukraine actually provided for operative-search activities in Chap. 21 "Involuntary Investigative (Investigative) Actions". They are conducted within the framework of criminal proceedings, the information of which is included in the Uniform Register of Pre-trial Investigations. From the moment of criminal offense registration begins his investigation, which is conducted by the investigator. Person identification committed a crime, by means of secret investigative (search) actions, the investigator or other subjects of criminal procedural activity shall be entrusted to operational units by issuing petitions, decrees, decrees, etc. Consequently, in modern law enforcement practice, the investigation of criminal offenses involves (including) the disclosure of a crime, namely: the identification of the person committed a crime. Therefore, this casts doubt on the expediency of using the term "disclosure", in relation to the investigation of crimes or criminal offenses in modern forensic definitions.

[1] *Cryminalistyka : pidruchnyk* (2015) [Criminalistics : textbook] / V. V. Piaskovskyi, Yu. M. Chornous, A. V. Ishchenko and others. Kyiv : Center sci. lit., p. 18 [in Ukrainian].

Thus, from the time of criminology emergence, it developed from the technical discipline that carried out practical tasks during the investigation of crimes to the modern scientific knowledge system, which is currently used in the realization of the tasks of judicial proceedings (criminal, civil, economic, administrative), and other tasks, related to the establishment of legal facts.

Taking into account our researches we offer the following stages of development of representations about the subject of criminalistics: the first stage (the end of the nineteenth and the beginning of the twentieth century) — during emergence of new field of scientific knowledge (Criminalistics), its subject covered the study of material evidence, the behavior of criminals and the activities of participants in the criminal process (Hans Gross, R. Reiss, A. Niecheforo, V. I. Lebedev and others); second stage (from the beginning of the XX century to the 1930's) — separating from science of criminal process, the subject of criminalistics covered the technical support for the investigation of crimes (G. Yu. Mannes, S. M. Tregubov, I. M. Yakimov and others); third stage (from the 1930s to 1967) — subject matter of Criminalistics as an independent science is the disclosure, investigation and prevention of crimes (O. M. Vasiliev, A. I. Vinierberg, O. O. Eysman, O. N. Kolesnichenko, S. P. Mitrichev, and others); fourth stage (from 1967 to the end of the twentieth century), Criminalistics studies the patterns of information about the crime and based on the knowledge of these laws, criminalistic means and methods of disclosure, investigation and prevention of crimes (R. S Belkin, V.G. Goncharenko, Yu. I. Krasnobayev, V. G. Lukashevich, M. V Saltevsky and others); fifth stage (from the beginning of the XXI century) — Criminalistics is defined as a science that studies the laws of criminal activity, information emergence of about a crime or any phenomenon in society and which is used in a variety of legal proceedings and related social relations (V. G. Goncharenko, A. V. Ishchenko, V. S. Kuzmichov, V. Yu. Shepitko).

Forensic science interpretation and its subject clearly reflects the state of Criminalistics in specific periods and stages and the immediate prospects for its development.

Taking into account the close relationship and interdependence between criminological science and the practice of counteracting crime, we note that significant and long-lasting changes in the activity of judicial and law-enforcement agencies in investigating criminal offenses, their trial, preventing crimes, led to the transformation of the subject of criminalistics. The new approach to this category should take into account the scope of forensic knowledge, conceptual approaches to the investigation of crimes provided by criminal procedural law, modern legal terminology.

ПРЕДМЕТ КРИМІНАЛІСТИКИ: ЕТАПИ ФОРМУВАННЯ ТА СУЧАСНІ ПІДХОДИ

В. В. Юсупов

Досліджено ґенезу підходів науковців до визначення предмета криміналістики, запропоновано етапи розвитку уявлень про нього. Установлено трансформацію предмета криміналістики на сучасному етапі реформування органів кримінальної юстиції України. Зроблено висновок, що тлумачення криміналістичної науки і її предмета відображає стан криміналістики в конкретні періоди та найближчі перспективи її розвитку.

Ключові слова: криміналістика, предмет криміналістики, закономірності, що вивчає криміналістика, етапи розвитку предмета криміналістики.

ПРЕДМЕТ КРИМИНАЛИСТИКИ: ЭТАПЫ ФОРМИРОВАНИЯ И СОВРЕМЕННЫЕ ПОДХОДЫ

В. В. Юсупов

Установлено трансформацию предмета криминалистики на современном этапе, обусловленную реформой Министерства внутренних дел, органов прокуратуры, судов и иных органов уголовной юстиции, сменой статуса, полномочий оперативных подразделений, органов досудебного расследования, экспертных учреждений, их организационно-структурными преобразованиями. Усовершенствованы представления о начальном этапе развития подходов к предмету криминалистики. Им определен период 1893–1914 гг., когда данные о предмете криминалистики отображались в работах, преимущественно, западноевропейских криминалистов (Г. Гросс, Р. Рейсс, А. Ничефоро и др.). Предложено пять этапов развития подходов к предмету криминалистики: первый (1893–1914 гг.) — изучение вещественных доказательств, поведения преступников и деятельность участников уголовного процесса; второй (с 1915 г. — 1930-е гг.) — техническое обеспечение расследования преступлений; третий (с 1930-х гг. до 1967 г.) — раскрытие, расследование и предупреждение преступлений; четвертый — (с 1967 г. до конца XX века) — изучение закономерностей возникновения информации о преступлении и основанных на познании этих закономерностей криминалистических средств и методов раскрытия, расследования и предупреждения преступлений; пятый (с начала XXI века до теперешнего времени) — криминалистика определена как наука, которая изучает закономерности преступной деятельности, возникновение информации о преступлении или другом явлении в обществе и которую используют в ряде видов судопроизводства и связанных с ними общественных отношениях. Доказано, что при таком новом подходе к определению предмета криминалистики необходимо учитывать сферы применения криминалистических знаний, концептуальные подходы к расследованию преступлений, предусмотренные уголовным процессуальным законодательством, современную юридическую терминологию.

Ключевые слова: криминалистика, предмет криминалистики, изучаемые криминалистикой закономерности, этапы развития предмета криминалистики.

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PROBLEMS OF FORMATION OF METHODICAL AND FORENSIC MEANS IN THE STRATEGY OF COMBATING CRIMES IN THE FIELD OF JUSTICE

Problems of formation of methodological and forensic means in the structure of counteraction to crimes in the field of justice are researched. With this purpose, the place of criminological methodology in the system of criminalistic knowledge and forensic science as a science and practical activity is analyzed. The historical preconditions for the use of methodological recommendations for the investigation of certain types of crimes are indicated. The problems of constructing a separate forensic methodology, which are related to its structure, types, dependencies, goals and the subjects that apply it, are considered. Particular attention is paid to the study of the positions of various scientists in relation to some elements of such a technique.

Keywords: forensic method, forensic method of investigation of crimes, crimes against justice, investigation of crime against justice.

The "front line", of the practice of combating crime is called a separate section of forensic science — "forensic method"[1]. In the system of forensic knowledge, it is a synthesis level, which combines the provisions of forensic technology and forensic tactics to the conditions of investigation of a particular type of crime[2]. Methodological recommendations for the investigation of individual crimes are known at least since the days of L. von Jagemann[3] and H. Gross[4], who tried to provide certain guidance to officials involved in the investigation of a particular type of crime. Today, the forensic technique is understood as a system of scientific regulations and

[1] Averianova T. V., Belkin R. S., Korukhov Yu. G. Rossinskaya E. R. (2007) *Krymynalystyka : ucheb. 3-e yzd.* [Criminalistics: tutorial 3rd ed.]. Moscow : Norma, p. 650 [in Russian].
[2] *Kryminalistyka : pidruch. / za red. V. Yu. Shepitka. 5-te vyd.* (2016) [Criminalistics : textbook / edited by Shepitko. 5th ed.]. Kyiv : In Yure, p. 415 [in Ukrainian].
[3] Jagemann L. Handbuch der gerichtlichen Untersuchungskunde. Frankfurt am Main: Kettembeil, 1838. P. 772 [in Ukrainian].
[4] Hans Gross. (1908) *Rukovodstvo dlja sudebnyh sledovatelej, kak sistema kriminalistiki: per. s nem. s 4-go dom. izd. L. Dudkin i B. Ziller.* [Criminal Investigations, a Practical Textbook. Translated from German by L. Dudkin, B. Ziller]. Saint Petersburg : Press M. Merkushev, p. 1040 [in Russian].

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recommendations developed on their basis for the organization and conduct of investigations and the prevention of certain types of crimes[1]. Definition of the concept of forensic methodology is contained in other literary sources[2].

For the purpose of constructing a methodology for certain types of crimes, some scholars point to the following dependencies: 1) on species characteristics of a crime; 2) from the subject of the crime; 3) from the retrospective nature of the investigation; 4) from the situational nature of the investigation; 5) on the level of development of technical and tactical and forensic means[3]. R. S. Belkin notes that general types of methods are formed on the basis of the criminal-legal classification of crimes (theft, robbery, rape, banditry, etc.) that can be grouped into even larger groups in accordance with the Criminal Code: crimes against a person, crimes against public order, crimes against justice, etc.[4]

Logically, the question is raised about the "formation of the configuration of the system of forensic methods of investigating crimes", V. A. Zhuravel, who called it the main elements: basic methodology, specific and subordinate forensic methods of investigation of crimes, generic forensic methods, interstate forensic methods and complex forensic methods[5]. Special interest, given the need to provide tactical and forensic and methodological recommendations for combating crimes against justice and investigating crimes against justice, names the possibility of generic forensic methods. V. A. Zhuravel refers to such methods of investigation of crimes that are united by the sign of a generic object in one section of the Special Part of the Criminal

[1] Averianova T. V. Belkin R. S. Korukhov Yu. G. Rossinskaya E. R. Papers mentioned above.

[2] Kolesnichenko A. N. (1976) *Obshhie polozhenija kriminalisticheskoj metodiki rassledovanija otdel'nyh vidov prestuplenij: tekst lekcii.* [General provisions of methods of investigation of certain types of crimes. the text of the lecture]. Kharkov : Yurid. int-t, p. 28, Vozgrin I. A. (1983) *Krimnalisticheskaja metodika rassledovanija prestuplenij* [Methods of crime investigation]. Minsk : Vyshcha Shkola, p. 215, Churilov S. N. (2002) *Kriminalisticheskaja metodika: istorija i sovremennost'* [Criminalistics methods: history and modernity]. Moscow : Marketing, p. 370; Matusovskyi G. A. (2004) *Zahalni polozhennia metodyky rozsliduvannia zlochyniv. Kryminalistyka : pidruchnyk* [General provisions of crime investigation methods]: Criminalistics: Manual edited by V. Yu. Shepitko. 3th ed. Kyiv : In Yure, p. 366–400; [in Ukrainian]. Shmonin A. V. (2006) *Metodika rassledovanija prestuplenij : ucheb. posob.* [Methods of crime investigation: tutorial]. Moscow : Yustitsinform, p. 464; Tischenko V. V. (2007) *Teoretychni i praktychni osnovy metodyky rozsliduvannia zlochyniv : monohraf.* [Theoretical and practical foundations of the methodology for investigating crimes : monograph.]. Odessa : Fenix; Gavlo V. K. (2008) *Obshhie polozhenija kriminalisticheskoj metodiki rassledovanija otdel'nyh vidov prestuplenij. Kriminalistika: uchebnik* [General provisions of methods of investigation of certain types of crimes. Criminalistics: manual / edited by E. P. Ischenko]. Moscow : Eksmo, p. 403–423; Shmonin A. V. (2010) *Metodologija kriminalisticheskoj metodiki: monograf.* [Methodology of Forensic techniques : monograph]. Moscow : Yustitsinform, p. 416 c.; Schur B. V. (2010) *Teoretychni osnovy formuvannia ta zastosuvannia kryminalistychnykh metodyk* [Theoretical bases of formation and application of forensic methods]. Kharkiv : Kharkiv, yurid., p. 320 [in Ukrainian].

[3] *Kryminalistyka : pidruch. / za red. V. Yu. Shepitka. 5-te vyd*. (2016) [Criminalistics: Manual edited by V. Yu. Shepitko. 5th ed]. Kyiv : In Yure, p. 417 [in Ukrainian].

[4] Averianova T. V. Belkin R. S. Korukhov Yu. G. Rossinskaya E. R. Papers mentioned above. pp. 652 [in Ukrainian].

[5] *Kryminalistychni metodyky: suchasni naukovi kontseptsii : monohrafiia* (2012) [Forensic methods: modern scientific concepts : monograph]. Kharkiv : Apostle, p. 92–94 [in Ukrainian].

Code of Ukraine and on the basis of forensically significant features inherent in several types[1].Various criminalists, such as V. P. Bahin, I. O. Vozgrin, G. Yu. Zhirny, G. A. Matusovsky, M. P. Yablokov and others referred to the problems of establishing the possibility of forming generic (general, group) forensic methods of investigation of crimes.[2] In our opinion, such an approach to generic methods of investigating crimes (including against justice) is not correct, as it is not capable of solving the problem of providing appropriate methodological recommendations for investigating crimes within the group, which is united by the section of the Special Part of the Criminal Code Of Ukraine. Therefore, the position of R. S. Belkin, which demonstrates such a direction of the formation of certain forensic methods as the creation of complexes of individual methodological recommendations of a greater degree of generalization, combining several types or even genera of crimes committed under certain conditions of place, time or persons, characterized by one or another distinctive feature[3]. In our opinion, the well-known criminalist was right about the possibility of forming methodological recommendations for the investigation of groups of crimes. That is, the creation of a forensic methodology for investigating crimes against justice can only be effective on the basis of the formation of certain criminalistic methods of investigating crimes of a certain type in accordance with the Criminal Code of Ukraine (a knowingly false declaration of a crime, a knowingly false testimony, a judge's decision to deliberately unjust decision, etc.) methodologies united by the section of the Special Part of the Criminal Code of Ukraine or other dominant feature of the syllables of a crime that determines the nature of the investigation of such crimes in general. The specificity of building separate crimes may require the construction of forensic "micromethods", which will also be included in the appropriate set of forensic recommendations (methods) for investigating crimes against justice. Such criminalistic micromethods may include recommendations for investigating a knowingly false testimony of the witness, a knowingly false testimony of the victim, a knowingly false expert opinion, a deliberately misleading translation of the translator, a knowingly

[1] Ibidem, p. 93.

[2] Bakhin V. P. (1999) *Krymynalystycheskaia metodyka: lektsyia* [Forensic technique: lecture]. Kyev, p. 21, 22; [in Russian]; Zhirny G. Yu. (2001) *Deiaki pytannia kryminalistychnoi metodyky. Konstytutsiia Ukrainy — osnova modernizatsii derzhavy i suspilstva : materialy nauk. konf., Kharkiv 21–22 cherv. 2001 r.* [Somme issues of forensic methods: The Constitution of Ukraine is the basis of modernization of the state and society: Scientific content. Conf. Kharkiv, June 21–22. 2001], Kharkiv : Pravo, p. 380 [in Russian]; *Kriminalistika: uchebnik / pod red. N. P. Jablokova.* (2001) [Criminalistics: manual / edited by N. P. Yablokov]. Moscow, p. 494 [in Russian]; *Kurs kriminalistiki: v 3-h t. / pod red. O. N. Korshunovoj, A. A. Stepanova* (2004). [Criminalistics course: in 3 vol. / ed. by O. N. Korshunova A. A. Stepanov]. Saint Petersburg : Jurid. Center: Press, vol. 2: Forensic methods: methods of crime investigation against personality, public safety and public order. P. 69, 70; [in Russian]. Matusovsky G. A. (1999) *Jekonomicheskie prestuplenija: kriminalisticheskij analiz : monograf.* [Economic crimes: forensic analysis : monograph]. Kharkov : Consum, p. 129 [in Russian].

[3] Averianova T. V., Belkin R. S., Korukhov Yu. G., Rossinskaya E. R. Papers mentioned above, p. 652.

false report by the appraiser on property valuation (Article 384 of the Criminal Code of Ukraine). Such an approach to constructing a complex of forensic methods of investigation of crimes against justice will provide the necessary detailed recommendations to the investigator who conducts an investigation into a particular crime against justice.

Formation of separate forensic methods of investigation of crimes against justice in view of the possibility of their association in a complex of forensic methods of investigation of crimes against justice requires the establishment of a "consumer", who should apply such forensic recommendations in the form of forensic techniques. The transformation of the models of the criminal process from the inquisition to the competitive and the mixed leads to the fact that the person who conducts the crime investigation receives from the legislator every time a new and changing set of functions and powers. Often, this leads to the fact that the person who conducts a pre-trial investigation of crimes, also receives a new title of the position: breeder[1], victim, forensic investigator and investigator. According to the current CPC of Ukraine, the investigator actually lost procedural autonomy, which led to the fact that certain functions of the pre-trial investigation began to be followed by other procedural figures. Thus, a significant influence on pre-trial investigation was made by the prosecutor through procedural guidance (Article 36 of the CPC of Ukraine). Taking into account even the name of this function, which is implemented by the prosecutor — the leadership, it can be concluded that he is not an outsider during the pre-trial investigation, but actually manages this process. Under the current CPC of Ukraine, he can independently conduct investigatory (wanted) actions (Article 223 of the CPC of Ukraine). Consequently, a separate forensic methodology for investigating crimes against justice cannot be formed for its application by an investigator alone. At the same time, a significant gap in the current CPC of Ukraine is that the procedural law does not distinguish between the functions of the investigator and the prosecutor while conducting investigative (search) actions, does not establish the levers of direct influence of the prosecutor as the procedural leader of the pre-trial investigation. Therefore, in our opinion, certain criminalistic methods of investigation of crimes should be formed not only for the investigator, but also for the prosecutor, which will allow recommendations on their

[1] Ampleeva T. Yu. (2012) *Pervyj litovskij statut v kontekste izuchenija institutov drevnerusskogo sudoproizvodstva. Sovremennye tendencii razvitija juridicheskoj nauki, pravovogo obrazovanija i vospitanija: materialy mezhdunar. nauch.-prakt. konf., posvjashhennoj 200-letiju juridicheskogo obrazovanija na Polockoj zemle, Novopolock 18–19 maja 2012 g.: v 2 t.* [First Lithuanian statute in the context of the study of institutes of Old Russian legal proceedings. Contemporary trends in the development of legal science, legal education and upbringing: international materials. scientific practice. conference dedicated to the 200th anniversary of legal education in the Polotsk region, Novopolotsk May 18–19, 2012: Composed of 3 vol.]. Novopolotsk PGU, vol. 1, p. 7, 8 [in Russian].

interaction with regard to pre-trial investigation of the corresponding type of crimes (including crimes against justice).

The Law of Ukraine: *On the National Anti-Corruption Bureau of Ukraine* of 16.10.2014 № 1698–VII (Article 10) and the relevant amendments to the CPC of Ukraine (Part 5, Article 216) introduced a new procedural position of detective. Its peculiarity is that it carries out operative-search activity and pre-trial investigation in criminal proceedings related to crimes committed by the law to the investigation of NABU (Part 1 of Article 10 of this Law). Taking into account the procedural status of the detective in carrying out his functions requires the construction of an appropriate forensic methodology for investigating crimes. Assignment to the investigation of detectives of the NABU to carry out a pre-trial investigation of certain crimes committed by a judge, a judge of the Constitutional Court of Ukraine, a jury (when performing his duties in court), the Chairman or Deputy Chairman, a member, an inspector of the High Qualifications Commission of Judges of Ukraine, prosecutors of the prosecutor's offices, as well as certain officials, the State Criminal Execution Service of Ukraine, the National Police and other bodies (Part 5 of Article 216 of the CPC of Ukraine), points to the need for the formation and application of separate forensic methods of investigation of crimes in the area of justice. Specificity of such a pre-trial investigation is to take into account the circumstances of committing such crimes, the status of the suspect, as well as the need to overcome the immunity of such persons.

Emergence of such a procedural figure as an investigating judge exercising judicial control over the observance of the rights, freedoms and interests of persons in criminal proceedings can be considered a new decree of the current CPC of Ukraine (Article 3 of the Criminal Procedure Code of Ukraine). Investigator judge decides on the application of measures to ensure criminal proceedings in the pre-trial investigation (Articles 134, 140, 179–183, 12–15, 17 of the CPC of Ukraine), on conducting investigatory (search) actions (Articles 234, 237, 240, 245 of the Criminal Procedure Code of Ukraine) and secret investigative (search) actions (Articles 233, 260–264, 267–270 of the CPC of Ukraine), and also considers complaints about decisions, actions and inactivity of the investigator, the prosecutor (Article 303 of the CPC of Ukraine)[1]. Significant influence of the investigating judge on the process of pre-trial investigation (including crimes against justice) may indicate the need for the formation of methodological and forensic recommendations for an investigating judge. This approach allows us to return to the discussion on the

[1] See in more details: Tumanyants A. R. (2013) *Instytut slidchoho suddi za novym Kryminalnym protsesualnym kodeksom Ukrainy. Universytetski naukovi zapysky.* [Institute of Investigative Judges under the new Criminal Procedure Code of Ukraine. University Scientific Notes]. № 1(45). P. 293–299 [in Ukrainian].

possibility of introducing a forensic judicial procedure[1]. The problems of forming a forensic method of judicial control (investigating judge) and forensic methods of judicial review have significant differences. The construction of the forensic method of court proceedings is formulated in accordance with the general objective of the criminal process and in view of the adoption in the future of the court decision as a whole in the form of a court verdict on specific criminal proceedings. It is in view of the cognitive process of judicial review and its general purpose that it is possible to affirm the question of the possibility and necessity of the formation of forensic methods. Moreover, the provision of methodological and forensic recommendations at the stage of judicial review was provided at the time of the famous criminalist G. Gross, when the forensic investigator was called a judge[2] and it was impossible to make a clear formal delineation of pre-trial investigation and judicial proceedings. As far as possibility of forming a forensic methods of control is concerned, in our opinion, such an approach cannot be realized by providing such recommendations to an investigating judge in view of the type of crime or action taken, since such a judge is limited to the CPC of Ukraine by solving a local problem related to making a decision on the application of measures to ensure criminal proceedings in the pre-trial investigation, conducting investigation (investigatory) and secret investigators (investigatory) actions, as well as consideration of a complaint to the decision I acts and omissions prosecutor. At the same time, the construction of a separate forensic method of pre-trial investigation of a certain type of crime for the final "consumer", of the investigator and the prosecutor (which carries out procedural guidance) should take into account the synthesis of typical tactical-forensic and technical-forensic recommendations regarding the appeal to the investigating judge who makes the decision in the appropriate proceeding. The importance of such a procedural figure as an investigating judge should determine the tactical peculiarities of conducting investigative (search) actions during the investigation of crimes against justice. In addition, it is important to predict possible counteraction to the investigation of criminal offenses by interested parties due to the unlawful impact on the investigating judge.

[1] Arotzker L. E. (1964) *Ispol'zovanie dannyh kriminalistiki v sudebnom razbiratel'stve ugolovnyh del.* [Use of criminalistics data in criminal proceedings]. Moscow : Yurid. lit., p. 223; Churilov S. N. N. Papers mentioned above. Schur B. V. Papers mentioned above. Aleksychuk V. I. (2015) *Okrema kryminalistychna metodyka sudovoho rozghliadu u kryminalnomu provadzhenni: sutnist ta zavdannia. Problemy zakonnosti.* [Separate forensic methods of judicial review in criminal proceedings: essence and objectives. Legality issues 2015. № 130], pp. 169–179; Garmashev Yu. P., Kirilova A. A. (2015) *Kriminalisticheskaja metodika sudebnogo razbiratel'stva po ugolovnym delam ob ubijstvah (ch. I st. 105 UK RF): teoreticheskie osnovy i prikladnye rekomendacii.* [Forensic methodology of court proceedings on criminal cases of murders (Part I of Article 105 of the Criminal Code of the Russian Federation): theoretical foundations and applied recommendations]. Moscow : Yurlitinform, p. 280 [in Russian].

[2] Grossber R. *Gans Gross (1847–1915). Kriminalist pershodrukovanij* (2017) [Hans Gross: (1847–1915). Kriminalist pershodrukovanyi]. № 14. P. 76 [in Ukrainian].

A certain problem in the formation of certain criminalistic methods of investigating crimes against justice is that they remain advisable for a person who conducts a pre-trial investigation. Therefore, in our opinion, the registration of such methods would be an important step forward, based on the example of the current Register of methods of conducting forensic examinations conducted by the Ministry of Justice of Ukraine[1]. This approach will make the process of pre-trial investigation more professional and accelerate it by type of crime, where such methods have already been formed. At the same time, the experience of creating such registries is already available to the General Prosecutor's Office of Ukraine, which holds the Unified Register of pre-trial investigations[2]. Formal consolidation of certain forensic methods of investigation of crimes against justice in the corresponding Register will allow to organize such methods. Such an approach to the registration of certain criminalistic methods of investigation of crimes against justice may be extended to other types and groups of crimes, which would make it necessary for them to be used by the subject of the investigation. Access to such a Register of Forensic Techniques will also make the prosecutors (especially those who did not have the practice of an investigator) to be more effective and procedural guidance on pre-trial investigation.

In general, today there is a lack of established forensic methods of investigation of certain types of crimes against justice and their groups. This situation is conditioned by differences in crimes against justice from other groups of crimes and among themselves, the complexity of this category of cases, the investigation of these crimes by investigators of various bodies, the specifics of the subject of the crime, the presence of certain immunities in the system of checks and balances in the balance of power branches.

ПРОБЛЕМИ ФОРМУВАННЯ МЕТОДИКО-КРИМІНАЛІСТИЧНИХ ЗАСОБІВ У СТРУКТУРІ ПРОТИДІЇ ЗЛОЧИНАМ У СФЕРІ ПРАВОСУДДЯ

Шепітько М. В.

Досліджено проблеми формування методико-криміналістичних засобів у структурі протидії злочинам у сфері правосуддя. Із цією метою проаналізовано місце криміналістисної методики в системі криміналічтичних знань і криміналістиці як науці та практичній діяльності. Указано на історичні передумови використання методичних рекомендацій щодо розслідування певних видів злочинів. Розглянуто проблеми побудови окремої криміналістичної методики, які стосуються її структури, видів, залежностей, мети та суб'єктів, що її

[1] *Oficijnij sajt Ministerstva justicii Ukraïni. Reєstr metodik provedennja sudovih ekspertiz* [Official site of the Ministry of Justice of Ukraine. Register of methods of conducting forensic examinations]. Last Update: 01.02.2018. URL: http://rmpse.minjust.gov.ua (Date accessed: 28.02.2018) [in Ukrainian].

[2] Clause 4 of the General Provisions of the Basic Principles of the Uniform Register of Pre-trial Investigations. On Approval of the Regulation on the Procedure for maintaining the Uniform Register of Pre-trial Investigations: Order of the General Prosecutor's Office of Ukraine dated April 6, 2016, № 139. URL: http://zakon.rada.gov.ua/laws/ show/z0680–16 (Date accessed 09.11.2018) [in Ukrainian].

застосовують. Окрему увагу приділено дослідженню позицій різних учених стосовно деяких елементів такої методики.

Ключові слова: криміналістична методика, криміналістична методика розслідування злочинів, злочини проти правосуддя, розслідування злочину проти правосуддя.

ПРОБЛЕМЫ ФОРМИРОВАНИЯ МЕТОДИКО-КРИМИНАЛИСТИЧЕСКИХ СРЕДСТВ В СТРУКТУРЕ ПРОТИВОДЕЙСТВИЯ ПРЕСТУПЛЕНИЯМ В СФЕРЕ ПРАВОСУДИЯ

Шепитько М. В.

Исследованы проблемы формирования методико-криминалистических средств в структуре противодействия преступлениям в сфере правосудия. С этой целью проанализировано место криминалистической методики в системе криминалистических знаний и криминалистике как науке и практической деятельности. Указаны исторические предпосылки использования методических рекомендаций по расследованию определенных видов преступлений. Рассмотрены проблемы построения частной криминалистической методики, которые касаются ее структуры, видов, зависимостей, цели и субъектов, ее применяющих. Особое внимание уделено исследованию позиций различных ученых относительно некоторых элементов такой методики.

Доказано, что формирование частной криминалистической методики расследования преступления против правосудия, учитывая возможность их объединения в комплекс криминалистических методик преступлений против правосудия, требует установки «потребителя», который должен применять такие криминалистические рекомендации в виде криминалистической методики. Преобразование моделей уголовного процесса с инквизиционного на состязательный и смешанный приводит к тому, что лицо, осуществляющее расследование преступления получает от законодателя каждый раз новый и меняющийся набор функций и полномочий. Часто это приводит к тому, что лица, осуществляющие досудебное расследование преступлений, именуются по-разному. По действующему УПК Украины следователь фактически потерял процессуальную самостоятельность, что привело к тому, что определенные функции досудебного расследования (или принятия решений на этой стадии) стали выполнять другие процессуальные фигуры: детектив, прокурор — процессуальный руководитель и следственный судья. Соответсвенно и методики расследования преступлений (в том числе против правосудия) должны формироваться с учетом того, на какого субъекта они распространяются.

Отдельной проблемой формирования частных криминалистических методик стала растущая необходимость их регистрации в соответствующем государственном реестре, что позволит осуществлять контроль эффективности и качества расследования таких преступлений.

Ключевые слова: криминалистическая методика, криминалистическая методика расследования преступлений, преступления против правосудия, расследование преступления против правосудия.

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TACTICAL DECISIONS IN THEORY OF CRIMINALISTICS: PROBLEMS OF DECISION MAKING

Acceptance issue of tactical decisions in Criminalistics theory is considered. Stages of tactical decisions are defined, namely: a) analysis of information on different aspects of the process of establishing the circumstances of a criminal offense; b) setting the goal of tactical influence; c) the formulation of a task to be solved; d) determination of means and methods of solving the problem; e) election tactical decision on possible options; e) decision implementation.

Keywords: tactical decision; stages of making tactical decisions; volitional act.

In Criminalistics theory, the adoption of tactical decisions occupies an important place due to their significance in establishing the circumstances of a criminal offense. Together with other decisions taken by authorized agents, tactical decisions in the pre-trial investigation contribute to solving various tasks of "cognitive, heuristic, procedural-legal, tactical-psychological, organizational, material-technical character", [1]. The need to make tactical decisions is due to the need to find the right information and often to receive it from people who cannot or do not want to provide it. At the same time, in Criminalistics, the problem of tactical decisions is considered fragmentary. Determining the structure of the decision-making process and its occurrence in the mental activity of the individual is treated differently by different scholars. The above determines a scientific search for determining the stages of tactical decision making and the place of this process in the person's mental activity, which is the purpose of the article.

Tactical decision making is the process of forming a solution that is optimal in a particular situation. In theory, the term "adoption", covers the

[1] Zhuravel V. A. (2017) *Taktychni zavdannia ta mekhanizm yikh vyrishennia. Teoriia ta praktyka sudovoi ekspertyzy i kryminalistyky : zb. nauk. pr.* [Tactical tasks and mechanism of their solving Theory and Practice of Forensic Science and Criminalistics Scientific paper collection]. Kharkiv : Pravo, Issue 17. P. 11 [in Ukrainian].

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period of intellectual activity of the subject of investigative (judicial) activity in relation to the construction of a tactical decision. We must accept the decision that is the final variant of the action of the person with the use of certain means and methods. The person decided to act in a certain way, that is, she made a decision. However, it is understandable that the definition of a subjective intention to act in a certain way is not yet a tactical solution, even if the person is confident that acting in this way will receive the desired result. In order for the decision to be considered necessary, the practical implementation of the theoretical model of the future tactical solution is considered necessary. The application of the term "future", is justified, because when a theoretical model is transferred to a real action of a person, the resulting model of the decision may undergo certain changes. This can be explained by the fact that the theoretical construction of the solution and the process of its implementation, on the one hand, are different, and on the other hand, they are closely related. Changing one phenomenon entails a change of another. Such a conclusion can be made on the basis of understanding tactical decision as a complex volitional act of a person. The integrity of the volitional act makes it possible to assert the integrity of its generating component — tactical decision.

As you know, all actions in the criminal proceedings are aimed at establishing the circumstances of a criminal offense. Such actions require voluntary efforts, which always end with the adoption of a certain decision. The will of the person is firstly directed at finding a solution (its formation), and then on its implementation[1].

Guided by the achievement of a certain goal volitional act ends after the necessary actions. The theoretically formed decision can also achieve its goal only after implementation. However, at the stage of implementation, there may be problems that have different effects on the adoption of the theoretical solution. Such an effect is due to the need to use the theoretical model in accordance with the conditions of a real investigative situation that has signs of dynamism [2]. Implementation, which is the last stage of a tactical decision, must translate into reality the theoretical construction of a solution. If the decision is taken too long, whether the implementation of the decision is delayed, or the situation is rapidly changing, the connection between the theoretically constructed solutions and the mechanism of its implementation is violated. In this case, there may be a problem situation that will be required, or a change in the mechanism for implementing the solution, or changes in its

[1] Uznadze D. N. (2004) *Obshhaja psihologija / per. s gruzinskogo E. Sh. Chomahidze; pod red. I. V. Imedadze.* [General psychology / translated from Georgian E. Sh. Chomahidze edited by I. V. Imeadze]. Moscow : Smysl SPb. : Piter, p. 130 [in Ukrainian].

[2] Kopilov I. A. (1988) *Sledstvennaja situacija i takticheskoe reshenie : ucheb. posobie*. [Investigation situation and tactical decision: tutorial]. Volgograd : VSH MVD SSSR, p. 16 [in Russian].

theoretical model. This suggests that a particular tactical decision model may not get the status of "tactical", due to the impossibility of its practical implementation. The above leads to the conclusion that the tactical decision covers the actions of the subject of the investigative (judicial) activity both in the process of theoretical construction of the decision, and in its practical implementation. This approach is true because the constructed theoretical model of the future tactical solution cannot exist in isolation without its practical implementation. On the other hand, only the solution that is theoretically constructed can be realized. The inextricable link between the theoretical model of the solution and its implementation indicates that the term "adoption of a tactical solution", is valid for determining the process as a whole. Selection of the solution can be realized only as a certain and necessary stage.

In the sequence of tactical decision making it is possible to identify certain components that determine the individual stages of the process. Parallels that can be drawn between them and the stages of a volitional act of a person can be called as stages of tactical decision making. Based on the definition of a tactical solution, these stages of adoption are logically interconnected between the stages of mental activity in shaping the decision, culminating in its practical implementation. All stages of the decision, including its implementation, are reasonably part of the so-called sequence of mental actions of the person. On the one hand, this sequence is determined by the will of the person, and on the other — sources of information about the committed offense and the possibility of their use. The stage of the said activity is an objective factor due to the need to identify and implement a tactical solution. The process of knowing the circumstances of the committed offense, which accompanies the preparation of the theoretical construction of the decision, and then its implementation, requires the definition of its sequence, with an emphasis on the practical side of this problem. At the same time, as noted earlier, we rely on the definition of tactical decision as a complex voluntary act of the subject of investigative (judicial) activity. This allows to assert a certain coincidence of the stages of decision-making and stages of a voluntary act of a person. Consideration of the stages of the tactical decision in accordance with the stages of a volitional act of a person determines the mental activity of the person in relation to the purpose of her in achieving the goal.

Voluntary actions of the person ending with the tactical decision is the result of one goal, the achievement of which is aimed at the will and act of tactical decision. Observable differences relate both to the peculiarities of the process of volitional processes, and to the peculiarities of the processes of the formation of a tactical solution. Voluntary activity of the person is a shell in the middle of which is taken (formed) and implemented a tactical decision. It

is impossible to imagine a tactical decision without volitional action (activity). Emerging at the beginning of a volitional act, a tactical decision is filled with content and ends with the end of the volitional act. Decision should be its implementation, without the volition will be incomplete[1]. This connection, which exists between a decision and a volitional act, is so strong that it does not allow separating one phenomenon from another. So, being a complex volitional act, a tactical decision produces stages of acceptance, which in basic details coincide with the stages of the willful act of man.

In forensic literature, scientists who studied the problem of tactical decision making, the structure of the adoption of these solutions complete the theoretical construction solution. These researches include the works of R. S. Belkin, MV Baranova, O. Yu. Golovin, V. A. Zhuravlya, O. S. Knyazkova, I. M. Luzgina, O. A. Cheburnova, O. E. Shuklin, S. Yu. Yakushin[2]. However, the structure of the tactical decision-making process is largely due to the structure of the tactical decision itself, its content[3]. It allows to assign to this list a number of scientists that define a tactical decision as a certain theoretical construction, not including its structure, the stage of implementation[4].

Emphasizing the problem under study, it is necessary to indicate some inertia in the interpretation of the concept of "tactical decision", in the forensic

[1] Rubinshtein S. L. *Osnovy obshhej psihologii* (2002) [The essentials of general psychology]. 2nd Ed. SPb. : Piter, p. 573 [in Russian].

[2] Belkin R. R. (1997) *Kurs kriminalistiki: v 3 t. T. 3: Kriminalisticheskie sredstva, priemy i rekomendacii* [Criminalistics course: Composed of 3 vol. vol. 3: Forensic means, methods and recommendations]. Moscow : Yourist, p. 176 [in Russian]; Golovin A. Yu., Baranov M. V. (2015) *Struktura mehanizma reshenija zadach rassledovanija prestuplenij. Izvestija TulGU. Jekonomicheskie i juridi-cheskie nauki* [Structure of the mechanism for solving the problems of the investigation of crimes. Izvesia TulGU. Economic and Legal Sciences]. № 4–2. P. 21 [in Russian]; Golovin A. Yu. (2002) *Kriminalisticheskaya sistematika : monografiya* [Forensic systematics : monograph.]. Moscow : LeksEst, p. 256, Zhuravel V. A. Papers mentioned above. S. 16–17; Knyazkov A. S. (2013) *Analiticheskie taktiko-kriminalisticheskie sredstva dosudebnogo proizvodstva: monografiya* [Analytical tactical and criminalistic means of pre-trial investigation : monograph]. Tomsk Publishing house Tomsk State University, p. 139–140 [in Ukrainian]; The same author. (2014) *Taktiko-kriminalisticheskie sredstva dosudebnogo proizvodstva : dis. … d-ra yurid. nauk:* [Analytical tactical and criminalistic means of pre-trial investigation : Doctoral thesis]: spec. 12.00.12 "Criminalistics, Forensic science activity, operative-search activity", Tomsk, p. 191 [in Russian]; Luzgin I. M. (1981) *Modelirovanie pri rassledovanii prestuplenij* [Modeling while crime investigation]. Moscow : Yurid. lit., p. 93 [in Russian]; Cheburenkov A. A. (2005) *Teoreticheskie osnovy kriminalisticheskoj taktiki i prikladnye aspekty ih realizacii v rassledovanii prestuplenij.* [Theoretical foundations of forensic tactics and applied aspects of their implementation in the investigation of crimes]. Ruzayevka : Ruzayevskiy pechatnik, p. 151–160 [in Russian]; Shuklin A. E. (2012) *Osobennosti prinyatiya informacionnyh i taktic*heskih *reshenij v slozhnyh sledstvennyh situaciyah: avtoref. dis. … kand. yurid. nauk* [Features of making information and tactical decisions in complex investigative situations : extended abstract of candidate thesis. spec. 12.00.09 "Criminal proceedings, forensics; operative-search activity"]. Yekaterinburg, p. 11 [in Russian]; Yakushin S. Yu. (2013) *Tehnologiya prinyatiya sledovatelem optimalnyh taktic*heskih *reshenij. Uch. zapiski Kazan. un-ta. Gumanitarnye nauki* [Technology of making an optimal tactical decision by an investigator. Scientific notes of Kazan Federal University. Humanities]. Kazan, vol. 155, p. 252 [in Russian]

[3] Yakushin S. Yu. Papers mentioned above, p. 249.

[4] These indicators include: V. M. Bykov, A. V. Dulov, Ya. Drapkin, I. O. Kopylov, Yu. V. Novik, S. I. Tsvetkov, V. Yu. Shepitko, G. S. Shostak, M. G. Shurukhunov and others.

literature in accordance with the definition of "solution", in encyclopedic dictionaries. The concept of "tactical decision", is filled with the specific content of criminal procedural activities, aimed at establishing the circumstances of the criminal offense and the person who committed it. Tactical decision is an important factor that adds dynamics to this process, and therefore, for a proper understanding of the structure of tactical decision-making, it is necessary to go beyond the traditional definition of the concept of a solution. It is important that if we consider that tactical decision is a person will act, then it is necessary to be consistent and to note that the will act ends with the implementation of the decision[1]. This allows us to conclude that a volitional act is the intellectual-volitional cover of a tactical decision that determines the sequence of its adoption.

In determining the structure of the tactical decision, we proceeded from the typical scheme of mental activity of the subject of investigative (judicial) activity in determining the circumstances of a particular event. In our opinion, the structure of tactical decision making consists of certain stages. Such stages are: 1) analysis of information on different aspects of the process of establishing the circumstances of a criminal offense; 2) setting the goal of tactical influence; 3) the formulation of the task to be solved; 4) determination of means and methods of solving the problem; 5) election tactical decision of possible options; 6) implementation of the solution. Defining in this sense the stages of tactical decision making allows us to see, first of all, the sequence of mental activity of the person in constructing the theoretical construction of the solution, and then its connection with the investigative (judicial) activity. The latter occupies an important place in the construction of the sequence of acceptance and definition of each of the specified stages.

Consider each stage of making tactical decisions.

At the first stage, the subject of the investigative (judicial) activity, which takes tactical decision, analyzes the available information regarding the commission of a criminal offense. Information that is subject to analysis can be conditionally divided into: a) information on how to prepare, execute and conceal the crime; his motive; the purpose and subjective attitude of the person to commit a criminal offense; b) information on the behavior of the suspect during the commission of an offense and during pre-trial investigation and trial; c) information on other persons (relatives, acquaintances of the suspect, etc.) that counteract the establishment of the circumstances of the offense; d) information regarding the available time, means and methods necessary for the adoption and implementation of the decision; e) information about the forecasted result of the decision, etc. The analysis of the above

information allows to outline the purpose, the achievement of which will give the opportunity to obtain new data in the proceedings.

The division of information into species may be carried out depending on the subject of investigative (judicial) activity, taking tactical decision. Most tactical decisions are made by those who carry out pre-trial investigation. It is at this stage of criminal proceedings that the need for tactical decisions is greatest. The information that is being analyzed characterizes the existing investigation situation and its volume is determined by the significance of the conclusion regarding the purpose of implementing tactical influence. This stage in the person's intellectual activity is aimed at identifying possible directions for obtaining new information on the commission of an offense. The importance of this stage is to determine the sources of evidence, their systematization on the significance and consistency of use. At this stage, the analysis of general information can narrow the directions of the implementation of tactical influence and close approach to the goal of tactical influence.

Significantly fewer tactical decisions are made by investigating judges, victims, suspects, defenders and other actors. The specified category of persons at this stage carries out the analysis of information concerning certain situations of investigation and actions of the bodies of pre-trial investigation. As a rule, individual cases of obtaining information by an investigator, a detective, and the circumstances of a crime, allowing to obtain new evidence information, are subject to analysis.

At the second stage of tactical decision making, the goal setting is tactical influence. The analysis of the available information about the crime distinguishes the goals, the achievement of which is a priority at a certain point in pre-trial investigation or trial. The choice of the goal that can be achieved by tactical effect on a particular object is an important stage in making tactical decisions. The chosen goal is the basis for making tactical decisions. By penetrating the entire decision-making process, the goal is the dominant factor in determining the content of other stages. Despite the fact that in the sequence of tactical decision making at the stage of setting the goal are others, all of them are subordinate and function to achieve it.

Analysis of information about a crime, a vision of the possibility of obtaining new information about the circumstances of his commission leads to the person's drive to act in a certain way. This is due to various factors, among which the duties of the person acquire an important significance, in accordance with its procedural status, as well as professional honor, which internally motivates it to solve emerging tasks and make tactical decisions. On the other hand, the goal setting is the vision of the object of tactical influence, the means and methods of its commission, as well as the final result

of tactical decision. That is, setting the goal when making a tactical decision helps to determine the task to be solved.

At the third stage of the tactical decision, the wording of the problem to be solved is carried out. This task is specified depending on the content of the investigative situation. With regard to the goal, the nature of the task can be complex or simple[1]. For example, tasks of complex nature include tasks of investigative (search) systems, and tasks that have a simple character-the task of a certain investigative (investigative) action, and so on. In this case, it is about how accurately it is possible to predict the consequences of tactical decision-making, to clearly define its purpose in obtaining the necessary information. Communication of the set goal and task is traced in the fact that the objectives are formulated after the goal setting. The purpose produces a task and this is evidenced by the definition of the problem in the reference literature[2]. Separating the formation of tasks as an element in the structure of tactical decision making is due to their significance in this process. If the goal of a tactical decision is a vision of a definite result, then the task involves a mechanism for its achievement.

The formulation of a task is always associated with the object of tactical influence. Information about the object of tactical influence occupies an important place in the structure of the specified process. This can be explained by the fact that the object of tactical influence may be the source of new information regarding the circumstances of the commission of the offense. For example, the object is the person of the suspect, whose interrogation allows you to get information about the crime. However, most objects of tactical influence are not sources of new information, but they in one way or another contribute to its receipt. An example can be the planning of activities or actions to prepare investigative (search) actions.

The multivariate directions of tactical influence include a large number of objects that can contribute to new information on the offense. Depending on the objective of tactical influence among the main objects of tactical decisions can be called: persons, carriers of information about the crime; investigative situation; activity planning; actions related to the organization

[1] Belkin R. S. *Ocherki kriminalisticheskoj taktiki* [Essays on forensic tactics]. Moscow, s. 91; [in Russian]. Garant N. L. (1973) *Harakteristika sledstvennyh zadach i psihologicheskie mehanizmy ih resheniya: avtoref. dis. … kand. yurid. nauk* [Extended abstract of candidate thesis]: spec. 12.00.09 "Criminal proceedings; judicial system; prosecutor's supervision; criminalistics", Moscow, p. 6 [in Russian]; Luzgin M. (1990) *Kriminalisticheskie zadachi i ih mesto v ocenke ishodnyh sledstvennyh situacij. Aktualnye voprosy ispolzovaniya dostizhenij nauki i tehniki v rassledovanii prestuplenij organami vnutrennih del.* [Forensic tasks and their place in the assessment of initial investigative situations. Actual issues of using the achievements of science and technology in the investigation of crimes by the bodies of internal affairs]. Moscow, p. 66 [in Russian].

[2] *Slovar psihologa-praktika* (2005) [Dictionary of practical psychologist] S. Yu. Golovin. 2nd ed. revised supplemented. Minsk: Harvest, p. 205 [in Russian]; *Psihologiya: slovar* (1990) [Psychology: Dictionary] edited by A. V. Petrgovsky, M. G. Yaroshevsky. 2nd ed. revised supplemented. Moscow : Politizdat, p. 119 [in Russian].

of the preparation and conduct of investigative (search) action; actions related to the organization of the preparation and conduct of the system of investigative (search) actions; actions related to the organization of preparation and conduct of tactical operations, etc.

At the fourth stage of the tactical decision, the means and methods for solving the problem are determined. In the mechanism of achieving the goal set in the task, the means and methods of implementing tactical effects on a particular object are individual in each particular case. Isolation of them into an independent stage of the structure of tactical decision-making and a certain separation from the task is determined by their significance in achieving the goal. Means and methods of tactical influence are determined by the object of influence and the onset of possible consequences in the application of certain means and methods. The dependence of the effectiveness of the tactical solution on individual means and methods of implementing tactical influence is the justification for distinguishing this step in the sequence of tactical decision making.

Properly selected means and methods are to get the desired result, which is the purpose of the tactical decision. The determining factor for their choice is the effectiveness in solving the problem. In our opinion, the means of tactical influence can be attributed: tactical reception; system of tactical receptions; investigative (wanted) action; system of investigation (search) actions; tactical operation and others. The choice of means of tactical influence depends on the goals that the person making the tactical decision wants to achieve. If a certain investigative (wanted) action is able to change the investigative situation, a decision is made on its conduct. In this case, it (investigative (wanted) action) is a means of tactical influence. Similarly, it is necessary to consider the system of investigation (search) actions and tactical operations, which are also means of tactical influence when making tactical decisions aimed at achieving the corresponding goals in the proceedings. Above mentioned means of tactical influence when used are specified by methods of tactical influence, which can be attributed: time, place, sequence, variability, consistency, complexity and frequency of the use of means of tactical influence.

At the fifth stage of the tactical decision, its final variant is determined. The choice of the correct (optimal) solution is carried out using the chosen method. In forensic literature, the view is expressed that the methods of making tactical decisions, as well as decisions themselves, depend on the complexity of the task to be solved[1]. In this context, known methods of solving problems in literature, namely: the method of transformation; method of allocation of signs; decomposition method; method of analogies[2]. Yes,

[1] Belkin R. S. *Kurs kriminalistiki* [Criminalistics course] : Composed of 3 vol. vol. 3. P. 176 [in Russian].

[2] Ibidem, p. 177–178.

indeed, the problem is solved by the application of certain methods, but at the same time these methods help to select the optimal and effective tactical solution. In our opinion, the methods of choosing a tactical solution is much larger and the use of a particular method is related to the complexity of the task and its specificity. For example, the task of finding a suspect; problems arising in the process of implementing a tactical combination; tasks that arise during the implementation of a tactical operation, etc. In the process of problem analysis, the method of its solution is chosen, which is also a method of choosing the final solution.

This stage in the acceptance mechanism is the result of the formation of the theoretical construction of a tactical solution. As a rule, there are several variants (alternatives) of solutions, from which one is selected, the most effective.

At the sixth stage of tactical decision making, the theoretical design of a solution (mental model) becomes a real act of the subject of investigative (judicial) activity. The sixth stage is the only one that is accessible to others. The implementation of tactical decisions — is the use of selected means and methods for the implementation of tactical influence and the solution of the problem and achieve the goal. At this stage, tactical decisions acquire their final form, which allows us to assess the correctness: the election of means and methods of tactical influence; their use; the sequence of their application; degree of achievement of the set goal and others.

The indicated separation of the sequence of tactical decision making on the stages is somewhat arbitrary, since the decision-making process until the moment of its implementation is carried out by the individual mentally. However, despite this fact, when deciding in a fast-moving situation, when it is impossible to focus attention on each of the stages of adoption, this sequence remains unchanged. An exception is the decision-making situation in the shortest time, when certain stages of acceptance are not conceived by a person in the absence of time. The probable passage of some of the components of the tactical decision is offset by the experience of the decision maker, his ability to reflexive thinking.

ТАКТИЧНІ РІШЕННЯ В ТЕОРІЇ КРИМІНАЛІСТИКИ: ПРОБЛЕМИ ЇХ ПРИЙНЯТТЯ

О. Ю. Булулуков

Розглянуто питання прийняття тактичних рішень у теорії криміналістики. Визначено етапи прийняття тактичних рішень, а саме: а) аналіз інформації щодо різних сторін процесу встановлення обставин кримінального правопорушення; б) постановка мети тактичного впливу; в) формулювання завдання, яке необхідно вирішити; г) визначення засобів і способів вирішення завдання; д) обрання тактичного рішення з можливих варіантів; є) реалізація рішення.

Ключові слова: тактичне рішення; етапи прийняття тактичних рішень; вольовий акт.

ТАКТИЧЕСКИЕ РЕШЕНИЯ В ТЕОРИИ КРИМИНАЛИСТИКИ: ПРОБЛЕМЫ ИХ ПРИНЯТИЯ

Булулуков О. Ю.

В статье рассмотрены этапы принятия тактических решений при установлении обстоятельств уголовного правонарушения, которые логически взаимосвязаны между собой. Предлагаются такие этапы: а) анализ информации, которая может включать информацию о способах подготовки, совершения и сокрытия правонарушения; целях и субъективного отношения подозреваемого к совершению правонарушения; его поведении при совершении правонарушения и во время досудебного и судебного следствия; относительно лиц, противодействующих установлению обстоятельств правонарушения; относительно средств и способов, необходимых для принятия и реализации решения; относительно прогнозируемого результата решения; б) постановка цели тактического воздействия, которая предполагает видение конечного решения результат при установлении обстоятельств правонарушения; в) формулировка задачи, подлежащей разрешению, и которая конкретизируется применительно к сложившейся следственной ситуации; формулировка задачи включает информацию об объекте тактического воздействия, основными из которых являются: следственная ситуация, планирование деятельности, действия, связанные с подготовкой и проведением следственного (розыскного) действия, либо системы следственных (розыскных) действий, либо тактической операции и др.; г) определение средств и способов решения задачи, к которым автор относит: тактический прием, систему тактических приемов, следственное (розыскное) действие, систему следственных (розыскных) действий, тактическую операцию и др.; д) выбор тактического решения из возможных альтернатив предполагает, определение оптимального варианта тактического решения с использованием избранного метода; е) реализация решения, включает преобразование теоретической конструкции решения в реальные действия субъекта следственной (судебной) деятельности. Эта последовательность, по мнению автора, обусловлена сложившейся следственной ситуацией и всегда является неизменной.

Ключевые слова: тактическое решение; этапы принятия тактических решений; волевой акт.

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ORGANIZATIONAL AND LEGAL PROBLEMS OF OVERVIEW OF DOCUMENTS IN THE INVESTIGATION OF YATROGENIC CRIMES

The organizational and legal problems of the review of documents in the investigation of crimes committed in the field of medical care are highlighted,

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and the ways of their solution are proposed. The attention is paid to the fact that the preliminary examination of documents is preceded by the implementation of such a measure of providing criminal proceedings as temporary access to things and documents. Rules and mechanism of application of this measure are considered. The list of documents to be examined in the investigation of crimes committed in the field of medical care is outlined. The circumstances which the investigator can establish during the review of these documents is determined. It is noted that the information contained in the medical documents and may be obtained by the investigator in the course of their examination, is a medical secret. Considered information that constitutes a medical secret.

Keywords: iatrogenic crimes, investigation of crimes in the sphere of provision of medical care, examination of medical records, medical secret, temporary access to things and documents.

When investigating crimes in the field of medical care, a large number of circumstances are subject to proof. The most specific and at the same time the most informative are: a violation of the standard and technology of providing medical care, a defect as a result of violations of the standard and technology of medical care, the type, stage of medical aid, during which there was a violation of the standard and technology, the physiological state of the patient, his behavioral features, professional and personal qualities of the medical officer, etc. These circumstances are established by conducting necessary investigative and procedural actions, one of which is the review of medical documents.

The problem of investigating crimes in the field of medical care was investigated in works by L. G. Dunaevskaya, E. P. Ishchenko, V. D. Pristankov, M. Yakovlev, and others. At the same time, the organizational and legal issues surrounding the examination of medical documents were not considered or investigated.

The purpose of the article is to highlight the organizational and legal problems of conducting a review of documents in the investigation of crimes committed in the field of providing medical care and suggest ways to resolve them.

The study and analysis of normative acts and literary sources from the outlined issues suggest that most medical documents subject to review contain medical secrets. Some issues concerning the definition of the content of medical secrets were investigated in the works of such scientists as V. I. Akopov, L. V. Kalunnikova, E. N. Maslov, V. P. Novoselov, I. L. Petrukhin, S. G. Stetsenko, L. D. Udalova, I. V. Shatkovska and others. Scientific approaches of most of these scientists to the understanding of medical secrecy coincide with the norm of Art. 40 «Medical secret» of the Law of Ukraine «Fundamentals of the legislation of Ukraine on health care»,

which states that medical workers and other persons who become aware of a disease in connection with the performance of professional or official duties, medical examination, review and their results, the intimate and family life of a citizen, shall not have the right to disclose this information, except cases provided for by legislative acts[1]. In addition, such scholars as I. L. Petrukhin, S. G. Stetsenko and I. V. Shatkovska consider it expedient to expand the list of information that constitutes the medical secret specified by the legislator. These scholars suggest including in the medical secret information about: the fact of applying for medical assistance; diagnosis; intended treatment (its methods and their effectiveness); disease outbreak and any medical actions that have taken place in relation to a person[2].

The main documents to be examined during the investigation of crimes in the field of medical care include: medical card of the inpatient patient; protocol of pathologic and anatomical research; card of the patient who left the hospital; medical card for an outpatient patient; Records of surgical procedures in the hospital, records of admission of patients in the hospital and refusals to hospitalize, recording the conclusions of the medical advisory commission, registration of ambulatory patients; informed voluntary consent of the patient for the diagnosis, treatment and for the operation and anesthesia, etc. For example, when reviewing, for example, documents such as:

— *medical card of the inpatient patient, the investigator may receive the following information about:* date and time of hospitalization; the name and code of the health care institution, which sent the patient to the hospital; hospital diagnosis and disease code; Clinical diagnosis of a patient at discharge or death; the type of hospitalization and its drive (for the first time or repeatedly); patient complaints, medical history, anamnesis of life, objective condition of the patient, preliminary diagnosis, plan of examination and plan of medical treatment; survey results (laboratory, ultrasound, X-ray, functional diagnostics, etc.), examinations and consultations of the patient by specialist doctors; the state of medical treatment; Surgical procedures or procedures, their date, duration (number of hours, minutes), code and name of the procedure or surgical operation, surname, name, patronymic and registration number of the adjacent specialist, type of anesthesia and registration number of the doctor-anesthetist, complications, if such happened; the number of patients hospitalized in bed-days; the result of the medical treatment of the patient (discharged with: recovery, improvement, deterioration, died or transferred to another health care institution); written

[1] *Osnovy zakonodavstva Ukrainy pro okhoronu zdorovia : Zakon Ukrainy* [The essentials of Ukrainian Legislation on Health Care : Law of Ukraine] 19.11.1992 № 2801–XII. URL: http://zakon1.rada.gov.ua (Date accessed: 13.03.2018) [in Ukrainian].

[2] Petruhin I. L. (1989) *Lichnaya zhizn: predely vmeshatelstva* [Personal life: limits of intervention]. Moscow : Yurid. lit. p. 24; Stetsenko S. G., Sahkovska I. V. (2010) *Medychne pravo Ukrainy (pravove zabezpechennia likarskoi taiemnytsi) : monohrafiia* [Medical Law of Ukraine (legal provision of medical secret) : monograph]. Kyiv : Atika, p. 24–25 [in Ukrainian].

clinical report summarizing the patient's state of hospitalization and discharge;

— *protocol of pathologic-anatomical investigation the investigator receives information about:* pathologic-anatomical diagnosis; presence of a clinical diagnostic error; divergence of diagnoses; data of late diagnostics; causes of false diagnostics; the dynamics of clinical, morphological and biochemical changes in the process of death; the mechanism of origin, as well as the development of the disease and its individual manifestations; Clinical-morphological case analysis; results of comparison of clinical and pathologic-anatomical diagnoses; the main cause of death; date of autopsy; information on the course of a pathologic-anatomical study with a detailed description of all changes that were discovered during the corpse's opening;

— *card of the patient who left the hospital, you can set the following information about:* date and time of hospitalization; the name and code of the health care institution that sent the patient to the hospital; hospitalization diagnosis and disease code; Department of health care facilities during hospitalization and on discharge; type of hospitalization; the term of hospitalization; the result of medical treatment of the patient; date and time of discharge or death of the patient; the number of patients spent in bed-days; Clinical diagnosis of a patient at discharge or death; complications of the underlying diagnosis or concomitant diseases (if any); manifestations of a side effect of a medicinal product; pathological conditions that led to the direct cause of death, and other significant conditions that contributed to death but not related to the immediate cause of death; medical procedures or surgical operations, their dates, duration, code and procedure name or surgical operation; surname, name, patronymic of the specialist who conducted the medical procedure or surgical operation; type of anesthesia, surname, name, patronymic of the anesthetist; complications, if any; the date and data of the examinations performed during the treatment of the patient in this health facility;

— *the journal of patient reception in hospital and the refusal of hospitalization can receive information about:* the health care institution, which was sent to the patient, or the surname, name, patronymic of the person who delivered the patient; the department in which the patient was hospitalized, and the medical card number of the inpatient patient; date and time of hospitalization of the patient; diagnosis of a patient, put by a health care institution who has sent him to a hospital; the final diagnosis of a patient at discharge from the hospital; information about the discharged, transferred to another hospital of the patient, indicating the date and name of the health care institution, where he was transferred; the reason for the refusal of the patient in hospitalization (absence of indications, referral to another hospital, failure of the patient, etc.) and a brief description of the objective state of the patient for the time of refusal; Measures taken regarding the patient in case of

refusal from hospitalization (provision of outpatient care, referral to another hospital, etc.);

— *the journal of surgical interventions in the hospital, the investigator receives information on:* person of the surgeon, an anesthesiologist; diagnosis before surgery; type of anesthetic that was used; diagnosis after surgery; assistants and operating nurses; the course of the operation and its duration; I will become a patient during surgery; medical measures that were carried out during the period of surgical intervention (injection of drugs, giving oxygen, etc.)[1].

Consequently, it is an indisputable fact that the information contained in the medical documents and may be obtained by the investigators in the course of their examination belong to the medical secret and to a range of circumstances to be proved in the criminal proceedings concerning crimes in the field of medical care.

In order to review the medical records, you must adhere to a certain procedure that involves providing access to the documents. The fact that the investigation of documents is preceded by the implementation of such a measure of criminal proceedings, such as temporary access to things and documents. Since this precautionary measure provides criminal investigations authorities with access to certain things and documents containing information that can be used as evidence of the fact or circumstances of a criminal offense, to make copies of them and, in the case of a decision made by an investigating judge, to remove them from the court (take a dent).

The study and analysis of the norms of the Criminal Procedural Code of Ukraine (hereinafter referred to as the CPC) provides grounds for arguing that temporary access to documents has the appropriate rules and mechanism of application. The main rules of application include: 1) temporary access to things and documents is carried out on the basis of the order of the investigating judge, the court;

2) the application of such an event is not allowed, if the investigator, the prosecutor does not prove that: a) there is a reasonable suspicion of committing a criminal offense of such severity, which may be the basis for the application of this measure to ensure criminal proceedings; b) the requirements of a pre-trial investigation justify such an degree of interference with the rights and freedoms of a person referred to in the application of the investigating prosecutor; c) the task may be fulfilled, for the purpose of which the investigator has been reached, the prosecutor appealed;

[1] *Pro zatverdzhennia form pervynnoi oblikovoi dokumentatsii ta Instruktsii shchodo yikh zapovnennia, shcho vykorystovuyutsia u zakladakh okhorony zdorovia nezalezhno vid formy vlasnosti ta pidporiadkuvannia : nakaz MOZ Ukrainy* (2012) [On Approval of Forms of Primary Accounting Documents and Instructions for their Filing Used in Health Care Institutions, regardless of the form of ownership and subordination: the Order of the Ministry of Health of Ukraine] dated February 14, № 110. URL: http://zakon1.rada.gov.ua (Date accessed 17.03.2018) [in Ukrainian].

3) an investigating judge, the court shall rule on the provision of temporary access to things and documents only if the party to the criminal proceedings in his petition proves the existence of sufficient grounds to consider that these speeches or documents: a) are or may be in the possession of the natural or legal person concerned; b) by themselves or in combination with other things and documents of the criminal proceedings in connection with which the petition is submitted, are essential for the establishment of important circumstances in the criminal proceedings; c) do not constitute themselves or do not include things and documents that contain a secret protected by law. In cases where an investigating judge, the court decides to temporarily access things and documents containing a secret protected by law, the party to criminal proceedings must, in addition to the circumstances, prove that it is possible to use as evidence the information contained in these speeches and documents and the inability of others ways to prove the circumstances that are supposed to be brought with these things and documents;

4) The parties to the criminal proceedings have the right to apply to the investigating judge, a court with a request for temporary access to things and documents, except for which access is prohibited, namely: correspondence or other forms of exchange of information between the counsel and his client or any person representing his client in connection with the provision of legal assistance; objects added to such correspondence or other forms of information exchange;

5) the decision of the investigating judge, the court is obligatory for all enterprises, institutions and organizations, officials and citizens, no circumstances can be viable for refusing to present or voluntarily issue things, documents required by the authorized person. Consequently, the person specified in the decision of the investigating judge, the court on temporary access to things and documents as their possessor, is obliged to provide temporary access to the cases specified in the decision and documents to the person indicated in the relevant decision of the investigating judge, the court[1].

As to the mechanism of temporary access to things and documents, nowadays a consistent procedure for the implementation of this measure is provided for the provision of criminal proceedings, namely:

1) petition for temporary access to things and documents shall be submitted to the local court, within the territorial jurisdiction of which is the body of pre-trial investigation. To the petition of the investigator, the prosecutor regarding the application of this measure, an extract from the General Prosecutor's Office of Ukraine on criminal proceedings is added, within which a petition is filed with the investigating judge. The Investigator

[1] *Naukovo-praktychnyi komentar Kryminalnoho protsesualnoho kodeksu Ukrainy: u 3 t. / za red. O. V. Stovby* (2013) [Scientific and practical commentary of the Criminal Procedural Code of Ukraine: 3 vol. edited by O. V. Stovba]. Kharkiv, vol. 1. P. 391–403 [in Ukrainian].

has the right to apply with the said petition only with the consent of the prosecutor, who oversees the legality of the pre-trial investigation. The investigating judge should not accept the investigator's request if he has not been agreed with the prosecutor or he has not agreed with him or it is unclear from the petition which prosecutor agreed;

2) consideration of a petition for temporary access to things and documents by an investigating judge, a court may be executed in two ways. The first is that an investigating judge, a court conducts a judicial challenge for a person who owns such things and documents. The summons of a judicial challenge indicates the obligation to preserve things and documents in the form in which they are at the time of receiving a judicial challenge. The investigating judge, the court examines the petition with the participation of the party who filed the petition, and the person who owns the things and documents. The second way of examining a petition for temporary access to things and documents applies if the petitioner proves that there is sufficient reason to believe that there is a real danger of changing or destroying things or documents. In such a case, the petition is considered by the investigating judge, the court without the call of the person in whose possession they are located;

3) an investigating judge, the court shall rule on the provision of temporary access to things and documents only in the event that the party to the criminal proceedings that applied for the petition proves the existence of the circumstances specified in the rules of application (paragraph 3). Also, the investigating judge, the court in a ruling on granting temporal access to things and documents may order the granting of the possibility of removing things and documents if the party to the criminal proceedings has proved the existence of sufficient grounds to consider that without such a seizure there is a real threat or destruction of things or documents, or such an extraction is necessary to achieve the goal of accessing things and documents. The decision of the investigating judge, court on temporary access to things and documents is made in two copies. In the decision of the investigating judge, the court handed the person the original decree. The second copy of the ruling remains in the court case;

4) the person, who has been granted permission for temporary access to things and documents, submits to their owner the original court order, presents it with a copy and proposes to grant access to it. The fact of presentation of the order of the investigating judge, court, delivery of her copy is certified by the signature of the owner on the original of this court decision;

5) if things and documents are withdrawn, their description is presented, which is given to the owner. At the request of the owner, the person who conducts this procedural act must be left copies of the withdrawn documents;
6) in the case of non-execution of the decision on temporary access to things and documents a criminal sanction is applied. An investigating judge, a court

at the request of a party to criminal proceedings who has been granted the right to have access to things and documents, has the right to decide on a search permit for the purpose of finding and seizing the said things and documents[1].

In our opinion, taking into account the specifics of the crimes in the field of medical care, it is expedient to carry out the extraction of medical records if the investigator in the application for temporary access to things and documents substantiates the need for the removal of documents, and the investigating judge, the court will make a decision and in the decision will issue an order on giving them the opportunity to be removed. The expediency of extracting documents is due to the fact that healthcare workers can make certain changes in them, trying to avoid responsibility or hide inadequate provision of medical care. However, when the decree on temporary access to things and documents has an order to grant them the opportunity to be removed, questions are then posed, for which the careful analysis of the provisions of the CPC does not provide an answer. These questions relate to the legal status of these things and documents, namely, whether they can be attributed to temporarily seized property; the terms of stay of these things and documents from the person who conducted this procedural act.

The study and analysis of criminal procedural legislation, the results of generalizations of forensic practice provide an opportunity to propose a mechanism for solving these unresolved issues. So, after removing these things and documents, in the decision on temporary access to things and documents, in our opinion, it is necessary immediately to review them in accordance with the requirements of Art. 237 of the CCP, since during the inspection the investigator can establish whether there are grounds to believe that the documents seized and inspected, or the items meet the criteria specified in Part 2 of Art. 167 CPC. In the event that these grounds are sufficient, it is necessary to impose an arrest on these documents or things. Consequently, the requirements of Articles 170–175 of the CCP, that is, the prosecutor, the investigator, in agreement with the prosecutor, must apply to the investigating judge or court with the request for the seizure of property, and this request must be filed not later than the next working day after the seizure of property, with what we suggest that the time taken to count the property should not be considered as a time to decide on temporal access to things and documents, and the moment when the end of the review of things and documents and the execution of the relevant protocols (the protocol for reviewing documents or things and minutes temporary seizure of property). In turn, this petition must be considered by the investigating judge, the court

[1] *Kryminalnyi protsesualnyi kodeks Ukrainy: naukovo-praktychnyi komentar: u 2 t. / O. M. Bandurka, Ye. M. Blazhivskyi, Ye. P. Burdol ta in.* (2012) [Criminal procedure Code of Ukraine: scientific and practical comment: 2 vol. / O. M. Bandurka, E. M. Blazhivskyi, Ye. P. Burdol and others]. Kharkiv : Pravo, vol. 1. P. 424, 428–432 [in Ukrainian].

not later than two days from the day of its receipt in court. According to the results of consideration of the petition by an investigating judge, the court makes a motivated ruling on the seizure of property or the refusal to satisfy the petition. In the case when the grounds for what things or documents meet the criteria of Part 2 of Art. 167 CCP are not enough; they must be returned to the person they were removed from, as the prosecutor makes a decision to recognize the unjustified temporary seizure of property (things and documents).

Thus, in our opinion, the proposed ways of resolving the organizational and legal problems of conducting a review of documents containing medical secret will facilitate an effective investigation of crimes committed in the field of medical care.

ОРГАНІЗАЦІЙНО-ПРАВОВІ ПРОБЛЕМИ ПРОВЕДЕННЯ ОГЛЯДУ ДОКУМЕНТІВ ПРИ РОЗСЛІДУВАННІ ЯТРОГЕННИХ ЗЛОЧИНІВ

М. В. Капустіна

Висвітлено організаційно-правові проблеми здійснення огляду документів при розслідуванні злочинів, учинених у сфері надання медичної допомоги, і запропоновано шляхи їх вирішення. Акцентовано увагу на тому, що слідчому огляду документів передує здійснення такого заходу забезпечення кримінального провадження як тимчасовий доступ до речей і документів. Розглянуто правила та механізм застосування цього заходу. Окреслено перелік документів, що підлягають огляду при розслідуванні злочинів, учинених у сфері надання медичної допомоги. Визначено обставини, які слідчий може встановити при проведенні огляду цих документів. Зазначено, що відомості, котрі містяться в медичних документах і можуть бути отримані слідчим у ході їх огляду, належать до лікарської таємниці. Розглянуто відомості, які становлять лікарську таємницю.

Ключові слова: ятрогенні злочини, розслідування злочинів у сфері надання медичної допомоги, огляд медичної документації, лікарська таємниця, тимчасовий доступ до речей і документів.

ОРГАНИЗАЦИОННО-ПРАВОВЫЕ ПРОБЛЕМЫ ПРОВЕДЕНИЯ ОСМОТРА ДОКУМЕНТОВ ПРИ РАССЛЕДОВАНИИ ЯТРОГЕННЫХ ПРЕСТУПЛЕНИЙ

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В статье рассмотрены организационные и правовые проблемы проведения осмотра документов при расследовании ятрогенных преступлений. Предложены пути разрешения этих проблем. Обращено внимание на то, что следственному осмотру документов предшествует проведение такой меры обеспечения уголовного производства как временный доступ к вещам и документам, содержащих определенные сведения. Эти сведения могут быть использованы как доказательства фактов или обстоятельств преступления. Кроме ознакомления с вещами и документами, эта мера предоставляет возможность сделать копии, а в случае принятия определенного решения следственным судьей, судом, изъять их. Рассмотрены правила и механизм применения этой меры. Обращено внимание на целесообразность изъятия медицинской документации, поскольку медицинские

работники могут вносить изменения в документы. Они делают это для того, чтобы избежать ответственности или скрыть преступление.

Определен перечень документов, которые подлежат осмотру при расследовании преступлений, совершаемых в сфере предоставления медицинской помощи. К таким документам относятся: медицинская карта больного; протокол патолого-анатомического исследования; карта пациента, который выбыл из стационара; медицинская карта амбулаторного больного; журнал записей оперативных вмешательств в стационере, учета приема больных в стационар и отказа от госпитализации и другие. Отмечено, что сведения, которые содержатся в медицинских документах и могут быть получены следователем при их осмотре, относятся к врачебной тайне. Врачебной тайной является информация: о заболевании, медицинском осмотре и его результатах, о факте обращения за медицинской помощью, диагнозе, назначенном лечении, прогнозе заболевания, интимной и семейной стороне жизни и любые медицинские действия, которые были проведены относительно пациента.

Ключевые слова: ятрогенные преступления; расследование преступлений в сфере предоставления медицинской помощи; осмотр медицинской документации; врачебная тайна; временный доступ к вещам и документам.

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POSSIBILITIES FOR APPLICATION OF THREE-DIGITAL DIGITAL TECHNOLOGIES AND MODERN SCIENTIFIC-TECHNICAL ACTIVITIES IN THE INVESTIGATION OF CRIMES

Issues related to the introduction of innovative methods, technologies and scientific and technical means into crime investigation are considered. The emphasis is placed on the technological capabilities of 3D visualization systems on examples of their use in foreign countries as a scientific and technical means of fixing the situation of the place of the event and further reconstruction of the crime. The expediency of expanding the scope of 3D laser scanning applications in the modern investigative and judicial practice of our state has been argued in order to increase the level of security of the bodies of pre-trial investigation by scientific and technical means and bring it closer to European standards.

Keywords: combating crime, laser scanners, systems of 3D visualization, reconstruction of a picture of a crime, three-dimensional digital technologies, fixation of a place of an event.

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The effectiveness of the fight against crime involves the use of opportunities of innovative methods and technologies, the latest scientific and technical means in the investigation and disclosure of crimes, which promotes rapid, qualitative obtaining of evidence, saving of forces and time of the entities authorized to conduct pre-trial investigation (investigators, detectives, prosecutors), as well as a correct, comprehensive assessment of the facts relating to the crime.

The future of all technologies is a virtual world. Main direction of Criminalistics development corresponding to its essence as a science, is the development of virtual reality associated with the computerization of spheres of life, the implementation of new modern technologies and their use in law enforcement activities. For criminologists, the use of opportunities of a rapidly expanding, expanded reality segment, which is essentially complemented by virtually any virtual elements, is essential for solving current and future challenges[1].

One example of the use of state-of-the-art advances in the world of investigative and judicial practice is three-dimensional digital technology and artificial intelligence, used to improve the visualization and reconstruction of a picture of a crime or its individual episodes by creating 3D models.

The investigation of crimes involves the precise and detailed fixation of the place of the event, especially important in investigating murders, robberies and road accidents[2]. The review is carried out immediately after receiving the event notification, as there is always a possibility of affecting the traceability of weather conditions or other factors that may lead to its alteration or destruction. As a result, evidence is lost that can have a critical negative impact on the investigation. For example, the complexity of the material situation of an accident, as a source of information about the facts, is characterized by a large amount of material traces, which in full measure is not always possible to investigate due to objective reasons. The complexity of the process of fixing the results of the survey, the accuracy and completeness of this investigative (wanted) action ensures the correctness and speed of the conduct of criminal proceedings[3]. Fixing the original, unchanged location of an event is an important point in providing possible evidence, and is usually done through photography and video recording. However, law enforcement agencies in

[1] Belous V. V. (2014) *Informacionnye tehnologii: novaya kategoriya kriminalistiki ili ocherednoe «modnoe» uvlechenie? Kriminalist pervopechatnyj* [Information technology: a new category of criminalistics or another "fashionable", hobby? Kriminalist pervopechatny]. № 8. P. 109 [in Russian].

[2] Raneri D. Enhancing forensic investigation through the use of modern three-dimensional (3D) imaging technologies for crime scene reconstruction. Australian Journal of Forensic Sciences. 2018. 30 Jan. URL: https://www.tandfonline.com/doi/abs/10.1080/00450618.2018.1424245? journal Code=tajf20 (Date accessed: 01.09.2018).

[3] Bilous V. Topical problems of technical and criminalistic support of National police of Ukraine. Kriminalist pervopechatny. 2016. № 12. P. 95 [in Ukrainian].

foreign countries now use laser scanners to visualize documentary crime information in a three-dimensional environment as the most reliable and precise means of fixing the scene except photo and video cameras[1].

Recent advances in the field of capabilities and availability of powerful technologies for creating 3D images began to be increasingly disseminated as 3D visualization systems in the practice of fighting foreign crime as a scientific and technical means of reconstruction of the scene. The adaptation for forensic purposes of laser scanning technologies in the mining and geodetic industry allows to fix and reconstruct the milestone details of the event as a whole, while the revolutionary modern systems provide an opportunity to study the totality of these data by investigators, prosecutors, detectives, experts and judges. Numerous useful data such as: determining the balloon flight trajectory, displaying traces of blood, identifying weapons, etc., can now be explored in three-dimensional space, providing an opportunity for the disclosure of new information through the reconstruction of complex criminal scenes, which cannot be done properly using conventional means and methods[2].

Fixing the crime situation with laser scanners allows you to further analyze and evaluate the crime scene with high accuracy, even years after receiving scan results [3]. Using the technology of laser scanning of terrain and objects, resulting in a 3D model, allows you to multiply the information generated on-site data events, provides a visual and convenient visualization in three-dimensional form. Unlike photo and video, the 3D model has a stereoscopic image and the ability to freely change the angle of view while viewing. In addition, the scan results obtained can be stored on any digital media without the possibility of change or adjustment. Consequently, during the conduct of subsequent investigative (search) actions and relevant expertise, you can again recreate a picture of the event that it was at the time of the scan[4]. This method opens up new opportunities for documenting, visualizing the crime event not only for investigators, prosecutors, detectives, but also for experts, for example, it allows you to analyze (trajectories, lines of vision, length measurement, etc.). Results of the scan give an opportunity: to fix and further restore the place of crime and the occurrence of events with great accuracy; interaction with real-time 3D event model; demonstration of the place of the event in its original state to other participants in the criminal proceedings, which were not directly present during its review; use as a source of evidence for a review of the picture of the crime in its initial state of the court for participants in the court session, for example, in order to reproduce

[1] Ma M., Zheng H. Lallie H. Virtual Reality and 3D Animation in Forensic Visualization. Journal of Forensic Sciences. 2010. 01 Sept. URL: https://doi.org/10.1111/ j.1556–4029.2010.01453.x (Date accessed: 02.09.2018).

[2] Raneri D. Papers mentioned above.

[3] Ma M. Zheng H. Lallie H. Papers mentioned above.

[4] Bilous V. Papers mentioned above, p. 97.

the offender's actions on the scene. Thus, the use of computer graphics techniques for the reconstruction of a crime begins to replace the traditional illustrative material that complements the protocol, and is becoming popular in modern investigative and judicial practice[1].

The use of the 3D visualization system for the reconstruction of an event site can be considered on an example of the work of Swiss researchers who worked with the non-contact optical 3D-digitizing system GOM ATOS[2]. The result of this system was 3D-data of the location of the event created by 3D laser scanning and photogrammetry[3]. Scientists used the technology Elcovision (PMS AG, St. Margrethen, Switzerland) and [4]GOM TRITOP (GOM, Braunschweig, Germany). So, being in the apartment, during a dispute with his father, a young man shot him with a pistol. Father died due to serious internal trauma. In his testimony, the son argued that the shot occurred by accident, when he fell on the bed after a shock from his father. At first, the police did not have accurate information about whether the incident was accidental or intentional. Three-dimensional virtual reconstruction was used to check this information and various versions, as well as to explain the course of the event. The analysis of significant information for investigation was based on the external and internal morphological damage of the deceased due to the combination of factual data and 3D graphics, which allowed to answer the questions regarding the dynamics of injuries. As a result of laser scanning of the entire surface of the body and fixation of wound lesions, data were obtained, combined into a three-dimensional model of the entire body of the deceased, taking into account both the external and internal structure. Documentation of the external injuries of the deceased was carried out using digital photogrammetry and scanning of the projection of a dashed drawing using the technology GOM TRITOP/ATOS[5]. Fixation of internal morphology and injuries was accomplished with the help of multilayer computer tomography and magnetic resonance imaging — methods that allow to visualize the internal structures of the body: the bones, organs and balls remaining in it, and also were used to reflect the trajectory of passing the ball through the body. In addition to the virtual 3D-reconstruction of the site, three-dimensional models of the bodies

[1] Ma M. Zheng H. Lallie H. Papers mentioned above.

[2] Website: Precise Industrial 3D Metrology. URL: https://www.gom.com (Date accessed: 06.09.2018).

[3] Digital photometry is a method of fixing objects by creating their three-dimensional model of two-dimensional photographs that are made from different points of view, using a digital camera from a hand or from a tripod. Calculation of photogrammetric images and three-dimensional coordinates of control points is carried out thanks to photogrammetric software.

[4] Website: PMS AG. Photo Mess Systeme AG Deutsch. URL: https://www. elcovision.com/ index.html (Date accessed: 06.09.2018).

[5] A system that reproduces the geometry of an object in a high-resolution 3D, almost to the visualization of the smallest structures.

of the suspect and the victim were made, their exact location relative to each other. Based on the trauma of the victim, the trajectory of the balloon was visualized. Three possible configurations were shown and the trial was demonstrated by video, with a 360° rotated image. The suspect's refutation was denied, since the victim's position did not correspond directly to the shot. As a result, it was concluded that the trajectory of the virtual ball does not match the trajectory of the ball described by the suspect. It is proved that a gun shot was carried out while the suspect was in the upright position[1].

Today, in addition to terrestrial laser scanning systems, there are new opportunities for obtaining photographic documentation due to the availability of small unmanned aerial systems known as unmanned aerial vehicles (drones)[2]. So, results obtained during the research by Czech scientists (Laboratory of Morphology and Forensic Anthropology, Department of Anthropology, University of Masaryk, Czech Republic) show that the use in criminology of unmanned aeronautical technologies, namely aerial photography from drones, allows you to create high-quality images that are suitable for building accurate large-scale 3D event site models. For example, the use of an unmanned DJI Phantom 2[3] equipped with a GoPro HERO[4] digital camera and the further processing of received images using photogrammetry using Agisoft PhotoScan® (an autonomous software that performs photogrammetric processing of digital images and the generation of three-dimensional spatial data)[5] can not only provide an overview large areas of the landscape with fixing small details in a short space of time, but also to recreate the large-scale 3D model of the site of the event. In addition, the use of drones is effective in finding parts of the dismembered body and obtaining video surveillance fixation[6].

It should be noted that the content of the investigation of any criminal act is that in the course of its investigation, with the help of forensic technology to carry out a purposeful search for traces, to establish a causal link between the set of these tracks, as well as the objects and processes that constitute the essence crime events[7]. In this regard, another product of innovative

[1] Accident or homicide — Virtual crime scene reconstruction using 3D methods / U. Buck, S. Naether, B. Räss, C. Jackowski, M. J. Thali. Forensic Science International. 2013. 10 Feb. Vol. 225. P. 75–84 URL: https://www.sciencedirect.com/science/ article/pii/S0379073812002587?via%3Dihub (Date accessed: 03.09.2018).

[2] Using drone-mounted cameras for on-site body documentation: 3D mapping and active survey / P. Urbanová, M. Jurda, T. Vojtíšek, J. Krajsa. Forensic Science International. 2017. Dec. Vol. 281. P. 52–62 URL: https://www.sciencedirect.com/ science/article/pii/S0379073817304292?via%3Dihub (Date accessed: 04.09.2018).

[3] Website: Phantom 2 — The Spirit of Flight. URL: https://www.dji.com/phantom-2 (accessed date: 06.09.2018).

[4] Website: GoPro. URL: https://shop.gopro.com/EMEA/cameras (Date accessed: 06.09.2018).

[5] Website: Agisoft PhotoScan. URL: http://www.agisoft.com (Date accessed: 06.09.2018).

[6] Urbanová P. Jurda M. Vojtíšek T. Krajsa J. Papers mentioned above.

[7] *Sushchnost krymynalystycheskoi tekhnyky. Teoriia ta praktyka sudovoi ekspertyzy i kryminalistyky : zb. nauk. pr.* (2017) [Terehovich V. N., Nimande E. V. Essence of Criminalistic

technology — a portable three-dimensional visualization system for work with voluminous footsteps at the scene of crime, drawn up by scientists at the Purdue Public Research University (Western Lafayette, USA), attracts attention. This system is designed to produce accurate three-dimensional images of tracks of tread protectors or foot tracks on the ground and snow. It represents an alternative to traditional methods of fixing evidence: photographic evidence and manufacturing of plaster casts. The system provides a more accurate result, which can be obtained in real time, given that the manufacture of plaster casts can take up to an hour. For most of the shoes that were used, the presence of very small cracks and scratches from wear is characteristic, and this system allows you to detect and fix these distinctive features that are identifying features in each particular case. The precise data on the track depth and identifying features of the object that left the trace is due to the use of LEDs that illuminate the surface of the snow or the ground. From the light that is displayed to the camera, the necessary information about the subject of research is obtained. The portable computer performs certain calculations, managing the projector and camera. Unlike some other systems, the new approach does not require the use of lasers. In addition, this project has the potential to produce three-dimensional parts of the prints[1].

As for Ukraine, the introduction of three-dimensional digital technologies into the practice of law enforcement officers was not so long ago. An example of this is the use of laser scanners FARO® Laser Scanner Focus 3D manufactured by the United States[2] in the expert divisions of the Ministry of Internal Affairs of Ukraine during the review of the scene. Focus 3D is the new FARO high-speed laser scanner model used to scan, measure and document results. Laser scanners use FARO laser technology to create detailed three-dimensional images of complex geometry in a few minutes. The new FARO Focus 3D scanner is equipped with a computer, a touch screen for managing the scanning process and a video camera, which allows you to get color scan results. The result is a three-dimensional model — an exact, virtual copy of reality, reproduced with millimeter accuracy and speed up to 976 thousand measurements per second.

Thus, the use of 3D laser scanning systems enables: the actual immersion into 3D space and the study of the place of the event in search of evidence; achieving a high level of detail with the participation of human characters; rapid fixing of objects; non-destructive method of obtaining information; obtaining

Technics Theory and Practice of Forensic Science and Criminalistics Scientific paper collection]. Kharkiv : Pravo, Issue 17. P. 36.

[1] New portable, user-friendly crime-scene forensics tech will take high-resolution 3–D images of shoeprints, tire tracks in snow and soil. 01 November 2016. URL: https:// www.purdue.edu/newsroom/releases/2016/Q4/new-portable,-user-friendly-crime-scene-forensics (Date accessed: 04.09.2018).

[2] Website: ARO®. Focus 3D Laser Scanner — FARO Technologies UK Ltd. URL: https://www.faro.com/en-gb/products/construction-bim-cim/faro-focus/ (Date accessed: 08.09.2018).

high-precision data; preservation of evidence for a long period of time and the reproduction of a crime event at any time; Visualize the crime event from a different perspective, for example, from the point of view of the victim or offender; obtaining new evidence in criminal proceedings, etc.

Involvement of the latest technologies in the form of 3D laser scanning systems in the activity of law enforcement bodies, expansion of their application, as well as the possibility of their use at the legislative level during pre-trial investigation and judicial review, will certainly contribute to a significant increase in the level of provision of pre-trial investigation institutions by scientific and technical means, bring it closer to European standards.

МОЖЛИВОСТІ ЗАСТОСУВАННЯ ТРИВИМІРНИХ ЦИФРОВИХ ТЕХНОЛОГІЙ І СУЧАСНИХ НАУКОВО-ТЕХНІЧНИХ ЗАСОБІВ У ДІЯЛЬНОСТІ З РОЗСЛІДУВАННЯ ЗЛОЧИНІВ

Н. В. Павлюк

Розглянуто питання, пов'язані з упровадженням інноваційних методів, технологій і науково-технічних засобів у діяльність з розслідування злочинів. Акцентовано увагу на технологічних можливостях систем 3D-візуалізації на прикладах їх використання в зарубіжних країнах як науково-технічного засобу фіксації обстановки місця події та подальшої реконструкції злочину. Аргументовано доцільність розширення кола застосування 3D систем лазерного сканування в сучасній слідчо-судовій практиці нашої держави з метою підвищення рівня забезпечення органів досудового розслідування науково-технічними засобами та наближення його до європейських стандартів.

Ключові слова: боротьба зі злочинністю, лазерні сканери, системи 3D-візуалізації, реконструкція картини злочину, тривимірні цифрові технології, фіксація місця події.

ВОЗМОЖНОСТИ ПРИМЕНЕНИЯ ТРЕХМЕРНЫХ ЦИФРОВЫХ ТЕХНОЛОГИЙ И СОВРЕМЕННЫХ НАУЧНО-ТЕХНИЧЕСКИХ СРЕДСТВ В ДЕЯТЕЛЬНОСТИ ПО РАССЛЕДОВАНИЮ ПРЕСТУПЛЕНИЙ

Н. В. Павлюк

Рассмотрены вопросы, связанные с внедрением инновационных методов, технологий и научно-технических средств в деятельность по расследованию преступлений. Отмечено, что одним из главных направлений развития криминалистики является освоение виртуальной реальности, связанной с компьютеризацией сфер жизнедеятельности, воплощением в жизнь новых, современных технологий и их использованием в правоохранительной деятельности. Применение технологии лазерного сканирования местности и объектов, в результате которого изготавливается 3D-модель, позволяет в несколько раз увеличить информативность собранных на месте происшествия данных, предоставляет наглядную и удобную визуализацию в трехмерном виде. В отличие от фото- и видеоизображения 3D-модель имеет стереоскопическое изображение и возможность свободной смены ракурса при просмотре. Кроме того, полученные результаты сканирования могут быть сохранены на любом цифровом носителе без возможности изменения или корректировки. Акцентировано внимание на

технологических возможностях систем 3D-визуализации на примерах их использования в зарубежных странах как научно-технического средства фиксации обстановки места происшествия и последующей реконструкции события преступления. Так, с помощью портативной трехмерной системы визуализации для работы с объемными следами на месте преступления можно получить точные трехмерные изображения следов протекторов шин или следов ног (обуви) на почве и снегу. Эта система представляет собой альтернативу традиционным методам фиксации доказательств: фотофиксации и изготовлению гипсовых слепков. В отличие от других систем, новый подход не требует использования лазеров. Аргументирована целесообразность расширения круга применения 3D систем лазерного сканирования в современной следственно-судебной практике нашего государства с целью повышение уровня обеспечения органов досудебного расследования научно-техническими средствами и приближения его к европейским стандартам.

Ключевые слова: борьба с преступностью, лазерные сканеры, системы 3D-визуализации, реконструкция картины преступления, трехмерные цифровые технологии, фиксация места происшествия.

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TRACING SAFETY RULE VIOLATION WHILE PERFORMING WORK UNDER INCREASED RISK

Positions and approaches of scientists to the definition of typical traces of violations of safety rules during high-risk works are considered. It is stated that material traces of violation of safety rules during performance of work with increased danger appear both directly in the place of the event, and in various documents. It is suggested to include among the typical material traces: traces-injuries on the victim's body; traces of hands, feet, microparticles of the victim's or offender's clothes; traces of destruction of structures, machines or mechanisms, etc.

Keywords: forensic characteristic; elements of forensic characteristics; violation of safety rules during work with high danger; typical traces of crime.

Taking into account the specifics of violations of the rules of safety in the performance of work with increased danger, it should be noted that a special place in the forensic description of this crime is occupied by typical traces. Typical traces of a crime on the site provide important information about the conditions under which these works are performed, certain hazards,

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technical reasons for the violation, etc. Therefore, the study of this element of forensic characteristics seems expedient and necessary.

In the scientific literature, the problems of the study of elements of forensic characteristics were devoted to the works of such scholars as R. S. Belkin, V. A. Zhuravel, V. O. Konovalov, I. O. Kucherkov, V. V. Tischenko, V. Yu. Shepitko, MP Yablokov and others.

As I. A. Kucherkov rightly points out, violations of safety rules find their material reflection in a specific environment, which is a set of material traces of events that allow the establishment of a violation of building codes, perpetrators, other circumstances of the event. These tracks can be located both directly on the site of the event and displayed in various documents related to the execution of works. On-site trails can provide information on the conditions under which these works were carried out, the presence of hazardous production and external factors, the technical causes of the event, and the extent of the victim's fault in. Based on these data, the investigator can draw an approximate picture of the event and make the main versions of its mechanism, whether there are or not any violations by specific officials[1].

It should be noted that material traces of violations of safety rules in the process of performing work with increased danger should be attributed, first of all, the results of reflection of criminal activity in the material environment[2]. The type and nature of violations of safety rules affects the peculiarities of the formation of typical traces of violations of safety rules during the execution of work with increased danger, which include the following:

— traces-injuries on the body of the victim in the form of bruises, gardens, wounds, torn garments of the victim, hematoma on the face, neck, arms, hips, etc.;

— traces of hands, feet, microparticles of clothes of the victim or offender (for example, in case of their joint finding on one building site);

— traces of destruction essential for the production of structures, machines or mechanisms or the destruction of a residential building.

Consequently, the material traces of criminal activity in the material environment, arising as a result of action or inaction, associated with violation of safety rules of production, should include the presence of corpses, injuries in the injured, traces of destruction or damage to premises, equipment[3].

[1] Kuchrkov I. A. (2003) *Rassledovanye prestupыkh narushenyi pravyl bezopasnosty pry provedenyy stroytelnыkh rabot : dys. ... kand. yuryd. nauk* [Investigation of criminal violations of safety rules during construction work : Candidate thesis]. 12.00.09. Moscow, p. 54 [in Russian].

[2] *Kryminalnyi kodeks Ukrainy: nauk.-prakt. komentar / Yu. V. Baulin, V. I. Borysov, S. B. Havrysh ta in.; za zah. red. V. V. Stashysa, V. Ya. Tatsiia* (2008) [Criminal Code of Ukraine: scientific and practical comment / Yu. V. Bakulin, V. I. Borysov, S. B. Gavrysh and others; edited by. V. V. Stachys, V. Ya. Tatsii]. 4th. ed. supl: Kharkiv : Odissey, p. 436 [in Ukrainian].

[3] Volobuiev A. F. (2011) *Kryminalistyka : navch. posib.* [Criminalistics : tutorial]. Kyiv : KNT, p. 436 [in Ukrainian].

In addition, we emphasize that when causing bodily harm or death in connection with the execution of work with increased danger along with the specified material traces that can remain on the victim, there is a real possibility of their occurrence and at the objects of the location of the event (shop, warehouse, construction site, mine), when contacting the victim with him (drops of blood, parts of personal protective equipment, etc.).

In this case, it is important that the type and general characteristics of the typical material traces in the form of causing certain bodily injuries to the victim are directly dependent on the actual type of work during which an accident occurred. After all, for example, in the performance of locksmith works using machines and mechanisms that have rotational, cutting parts of the device, there may be traces in the form of cutting, cutting, cutting or tearing on the body of the victim whose formation is associated with the action of machines and mechanisms, on which these works were performed. Thus, the head of flour-grinding production of LLC "KPF", Roma "December 14, 2012, admitted the senior officer of flour-grinding production L., whose qualification did not correspond to work with increased danger on rollers, knowingly knowing that he had not passed special training and passed the examinations, allowed him to carry out the duties of grinding grain. In addition, K., being the head of the work with increased danger, unfairly performing his duties in violation of Clause 4.10 of the job description, did not exercise control over the observance of rules and norms of labor protection, rules of handling machines, mechanisms and equipment subordinate to him an employee, as a result, L., without being trained in safe working conditions when performing work with increased danger in violation of clause 1.10 of the instructions of the hardware officer, approved on January 3, 2012 by the executive director, opened the protective fence without disconnecting the and this machine from power and began to remove his hands from the remnants of roller grinding products. During cleaning, the load on the roller decreased, and the machine started, while tightening the fingers of the left hand L. between the rolls, resulting in the victim received bodily injuries in the form of traumatic amputation of the left, 2, 3, 4 and 5th left fingers at the level of n Tibial bones and the 1st thumb of the left hand at the level of the main phalanx, which, according to the findings of the forensic examination № 152–ПР / 12 of June 12, 2012, belong to grave bodily injuries. Consequently, K. as a servant committed a number of violations of normative documents on occupational safety and safety, which entailed grave consequences[1].

It should be noted that the carriers of material traces also serve some documents related to the organization of safety of production at the enterprise, site, during the execution of a particular type of work. A document is a

[1] *Arkhiv Pervomaiskoho miskraionnoho sudu Kharkivskoi oblasti za 2012 r.,* [Archive of Pervomaisk City Court of Kharkiv Region] for 2012, № 2030/240 [in Ukrainian].

material carrier of information intended for its transmission in time and space[1]. The following may be the bearers of security breach information. Firstly, documentation on the organization of safe work execution (before committing an offense):

— the charter and collective agreement of the enterprise;

— orders and orders to establish an organizational unit on labor protection and conduct preventive measures on occupational safety;

— orders for the recruitment of employees and the assignment of duties on compliance with safety rules;

— job descriptions, regulations and safety instructions;

— acts on the certification of workplaces;

— Medical cards of employees and documentation for medical examination of employees;

— contracts and initial documentation on conducting training and annual verification of knowledge on occupational safety issues;

— an order to carry out instrumental control of machines and magazines for their technical state and safety;

— magazines of the district regulations;

— Certificates and licenses granting the right to carry out works.

Second, the documentation on the organization of safe works directly in their implementation:

— attire: work permit tolerances (including those provided by special legal acts);

— magazines of reception and delivery of load-lifting machines and mechanisms;

— Variables assignment magazines;

— logbooks for introductory instruction on safety and occupational safety;

— logs of registration of briefings on labor protection of workers;

— documents containing information on the issuance of personal protective equipment;

— acts on preliminary checking of machines and mechanisms, which carry out work with high risk;

— transportation letters for transportation of protective fencing from a certain place for the purpose of their establishment.

Thirdly, the documentation that was drawn up following a violation of the safety rules:

— notification of an accident at an enterprise, institution or organization;

— act of conducting an investigation (special investigation) of an accident (accident) that occurred (occurred) (form H-5);

[1] *Kryminalistyka: akademichnyi kurs : pidruch. / T. V. Varfolomeieva [ta in.].* (2011) [Criminalistics: academic course Manual vol. V. Varfalomeev and others]. Kyiv : Kyiv : Yurinkom Inter, p. 165 [in Ukrainian].

— act about an accident involving production (form H-1);

— card of a professional disease (poisoning) (Form P-5);

— log of the registration of persons who have suffered from accidents at work;

— conclusion about the accident, catastrophe, event (incident) on transport (form T-1);

— an order of the authorized body to eliminate the causes of the occurrence of dangerous consequences (Form H-9);

— report of the place where the accident occurred[1].

Also, it should be noted that the nature of the traces in the specified organizational documents for violating safety rules during work with high risk, their presence or absence is affected by the specificity of the method (forms) of violation of these rules. In case of their violation by means of non-disclosure of means of individual protection, the tracks will be information contained in the documents about their extradition. In case of violation of the requirements during loading and unloading operations with the help of machines and mechanisms, the tracks will contain the information contained in the documents on the carrying out of the technical inspection and control over the service, information in the transport sheets.

The nature of the documentation, which contains information on compliance with safety rules, depends on the specifics of the work performed. In particular, according to V. M. Makhov with co-authors, the documents containing important information on the implementation of construction work at an altitude that caused the fall of the victim should include: passport for inventory forests, stages, cradles; written permission of the chief construction engineer for the production and operation of non-inventory forests; project of construction of non-inventories forests; the act of acceptance of scaffolding and the platform of the work of the manufacturer; the act of acceptance of forests by the commission; repeated act of acceptance of forests at renewal of works; test of hanging, lifting forests and cradles; act of testing hooks for the suspension of forests; act of testing ladders; act of testing the safety belts and documents on their receipt and issuance to the worker; documents indicating the state of the weather at the time of the event; documents indicating that the worker has the right to work at a height.

Allocation of material tracks is closely linked to the crime circumstances, in particular, to time, place, type of production, nature of performed work. These traces can indicate certain circumstances of the crime, namely: a) the nature of the event, the working conditions (high or too low temperature, air humidity, confusion in the workplace, significant concentration of dust or poisonous

[1] Spasenko K. O. (2015) *Dokumentoobih i yoho znachennia pry rozsliduvanni porushen pravyl bezpeky pid chas vykonannia robit iz pidvyshche-noiu nebezpekoiu. Teoriia ta praktyka sudovoi ekspertyzy i kryminalstyky* [Documentation and its significance in investigating violations of safety rules during work with high danger. Theory and Practice of Forensic Science and Criminalistics] Issue 15. P. 135–136 [in Ukrainian].

substances, poor lighting); b) the non-working condition of the mechanisms, devices and tools used by the victim; c) the cause of the event (fault of machines and mechanisms, control, measuring and signaling devices, fusion of wires, indicating a short circuit, lack of personal protective equipment, etc.)[1].

Offenders, aware that traces can help to expose their involvement in the commission of the crimes in question, often make efforts to eliminate them or distort them; for example, mechanisms can be wiped off and dismantled, in which the accident occurred; before the arrival of law enforcement officers, work is not stopped on the site where the event occurred; changes in documents related to the protection of labor in the organization are being made or, if the document is too compromising officials, is completely destroyed, etc. Thus, the investigation of such a crime is greatly complicated, as a result of which the criminal proceedings may be closed[2].

Thus, we can conclude that typical violations of safety rules during high-risk jobs are determined by the type of work performed, the way (form) of violation of safety rules, situation and place.

СЛІДОВА КАРТИНА ПОРУШЕНЬ ПРАВИЛ БЕЗПЕКИ ПІД ЧАС ВИКОНАННЯ РОБІТ ІЗ ПІДВИЩЕНОЮ НЕБЕЗПЕКОЮ

К. О. Спасенко

Розглянуто позиції та підходи науковців до визначення типових слідів порушення правил безпеки під час виконання робіт із підвищеною небезпекою. Констатовано, що матеріальні сліди порушення правил безпеки при виконанні робіт із підвищеною небезпекою виявляються як безпосередньо на місці події, так і в різних документах. Запропоновано до числа типових матеріальних слідів віднести: сліди-ушкодження на тілі потерпілого; сліди рук, ніг, мікрочастинки одягу потерпілого або злочинця; сліди руйнування споруди, машин або механізмів тощо.

Ключові слова: криміналістична характеристика; елементи криміналістичної характеристики; порушення правил безпеки під час виконання робіт із підвищеною небезпекою; типові сліди злочину.

СЛЕДОВАЯ КАРТИНА НАРУШЕНИЙ ПРАВИЛ БЕЗОПАСНОСТИ ВО ВРЕМЯ ВЫПОЛНЕНИЯ РАБОТ С ПОВЫШЕННОЙ ОПАСНОСТЬЮ

К. А. Спасенко

Рассмотрены позиции и подходы ученых к определению типичных следов нарушения правил безопасности во время выполнения работ с повышенной опасностью. Констатировано, что материальные следы нарушения правил безопасности при выполнении работ с повышенной опасностью выявляются как непосредственно на месте происшествия, так и в различных док ументах. Следы на месте события могут предоставлять информацию об условиях, в которых осуществляются эти работы, о наличии опасных производственных и внешних факторов, технических причинах нарушения, степени вины пострадавшего и т. п. К числу типичных материальных следов принадлежат: повреждения на теле пострадавшего; следы рук, ног, микрочастицы одежды пострадавшего или

[1] Volobuiev A. F. Papers mentioned above, p. 437.
[2] Kuchrkov I. A. Papers mentioned above, p. 55.

преступника-нарушителя; разрушение важного для производства сооружения, машин или механизмов или жилого здания. Выделение материальных следов тесно связано с обстановкой совершения преступления, в частности, со временем, местом, видом производства, характером выполняемых работ. Эти следы могут свидетельствовать об определенных обстоятельствах совершения преступления, а именно о: характере события, условиях работы; нерабочее состояние механизмов, приспособлений и инструментов, которыми пользовался пострадавший; причине события. Носителями материальных следов также являются определенные документы, связанные с организацией безопасности производства на предприятии, участке во время выполнения определенного вида работ. Каждый вид (группа) преступлений отличается наличием определенной «следовой картины», обобщенные данные о которой имеют существенное практическое значение для их расследования. Совокупность данных о материальных следах преступления, их особенности и локализацию необходимо рассматривать как один из элементов криминалистической характеристики преступлений, касающихся нарушения правил безопасности при выполнении работ с повышенной опасностью.

Ключевые слова: криминалистическая характеристика; элементы криминалистической характеристики; нарушение правил безопасности во время выполнения работ с повышенной опасностью; типичные следы преступления.

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RESOLVING A PROBLEM FOR THE DEVELOPMENT OF A SINGLE CRIMINALISTIC METHOD FOR THE INVESTIGATION OF INVESTIGATIONS COMBINED BY HOLDING

Prerequisites for of a separate forensic method (micromethods) development for the investigation of murders combined with the possession of a person's dwelling are considered. The essence and mechanism of this type of killing are investigated, as well as the main features of their implementation are singled out. The structural elements of a separate forensic methodology (micromethods) of murder investigations, combined with the possession of housing, are proposed.

Keywords: murder, combined with possession of housing; the mechanism of murder, combined with the possession of housing; structural elements of the methodology (micromethods) for the investigation of murders combined with possession of housing.

Strengthening the fight against crime requires a high level of investigative activities aimed at timely and effective disclosure and investigation of crimes against human life and health. Currently, cases of

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murders of mercenary[1] motives have become more frequent in Ukraine, and their disclosure and investigation are causing some difficulties for practical workers. According to the statistics of the General Prosecutor's Office of Ukraine, the number of registered murders of mercenary motives on materials of criminal proceedings in 2016 amounted to 846, in 2017 — 671, and in the current 2018 — 194[2].

In the structure of murders of mercenary motives, separate murders are aimed at obtaining certain property rights, namely rights to residential space (ownership of residential premises or other real estate)[3]. As practice has shown, among the factors that have contributed to the increase in crime in the real estate market were social contradictions, namely: the development of a market economy and a private property institute, expansion of the market for privatization of apartments, ineffective work of law enforcement agencies; weakening the activity of state power structures, falling welfare of citizens, rising real estate prices, imperfection of regulatory legal regulation of market relations in real estate, criminalization of the economic sphere (including such as the housing market), the creation of criminal associations of their own commercial structures and etc.[4]

[1] Criminological literature paid particular attention to their study (see child.: Berezhny S. *Osoblyvosti sanktsii ch. 2 st. 115 KK ta yii spivvidnoshennia i z inshymy sanktsiiamy okremykh statei v osoblyvii chastyni KK Ukrainy. Pravo Ukrainy* (2009) [Features of the sanction of Part 2 of Article 115 of the Criminal Code and its relationship with other sanctions of certain articles in a special part of the Criminal Code of Ukraine. Legal Journal : Law of Ukraine] № 6. P. 133–138 [in Ukrainian]; The same author. (2013) *Spivvidnoshennia umysnoho vbyvstva z koryslyvykh motyviv z inshymy riznovydamy umysnoho vbyvstva pry obtiazhuyuchykh obstavynakh. Universytetski naukovi zapysky* [Value of intentional murder of mercenary motives with other types of intentional murder under aggravating circumstances. University Scientific Notes]. № 1(45), p. 233–241 [in Ukrainian]. The same author. *Rozmezhuvannia umysnoho vbyvstva z koryslyvykh motyviv vid inshykh riznovydiv umysnoho vbyvstva pry obtiazhuiuchykh obstavynakh. Visnyk Verkhovnoho Sudu Ukrainy* (2010) [Value of intentional murder of mercenary motives with other types of intentional murder under aggravating circumstances. Bulletin of the Supreme Court of Ukraine]. № 8(120), p. 36–42; Koval M. P. *Kryminalizatsiia vbyvstva za koryslyvymy motyvamy: porivnialnyi analiz. Aktualni problemy derzhavy ta pra-va : zb. nauk. pr. Vyp. 25.* (2005) [Criminalization of murders for selfish motives: comparative analysis. Actual issues of state and law: Scientific paper collection Issue 25]. Yurid. lit., p. 511–517 [in Ukrainian]; The same author. *Tendentsii koryslyvykh vbyvstv na pivdni Ukrainy. Pravo KhKhI stolittia: stanovlennia ta perspektyvy rozvytku: materialy mizhnar. nauk-prakt. konf.* (2006) [Trends in mercenary murders in the south of Ukraine. Law of the 21st Century: Formation and Development Prospects: Internship Materials. science-practice Conf.]. Mykolayiv, p. 506–508; Yagodynskyi. *Kvalifikatsiia umysnykh vbyvstv z koryslyvykh motyviv ta rozbiinykh napadiv zi smertelnymy naslidkamy. Pravo Ukrainy* (1996) [Qualification of intentional murders with mercenary motives and robberies with fatal consequences. Legal Journal : Law of Ukraine]. № 11. P. 42–44 [in Ukrainian]; Obremko Yu. O. (2014) *Kryminolohichnyi analiz umysnykh vbyvstv, shcho vchyniaiutsia z koryslyvykh motyviv. Chasopys Kyivskoho universytetu prava: Ukrainskyi naukovo-teoretychnyi chasopys.* [Criminological analysis of intentional murders committed from selfish motives. Journal of Kyiv University of Law: Ukrainian scientific and theoretical journal]. Kyev, № 2, p. 328–332 [in Ukrainian].

[2] URL: https://www.gp.gov.ua/ua/erdr.html.

[3] Borisov V. I., Kuts V. N. (1995) *Prestupleniya protiv zhizni i zdorovya voprosy kvalifikacii* [Crimes against life and health issues qualifications]. Kharkov, p. 9 [in Russian].

[4] Tkachenko M. O. (2008) *Rozsliduvannia vbyvstv, vchynenykh z metoiu zavolodinnia nerukhomym mainom: deiaki elementy kryminalistychnoi kha-rakterystyky. Aktualni problemy derzhavy i prava : zb. nauk. pr*. [Investigation of murders committed in order to seize immovable property: some elements of forensic characteristics. Actual issues of State and Law: Scientific paper

Murder, combined with the possession of a person's dwelling is voluntary acts[1] of intentional nature, aimed at depriving a person of life in order to seize her habitation (the right to housing). First of all, it must be noted that, in accordance with the current legislation, such actions are qualified according to clause 6 of Part 2 of Art. 115 of the Criminal Code of Ukraine, that is, as an intentional murder, is made of mercenary motives. The object of a crime in accordance with this article is human life. It should be noted that according to clause 6 part 2 of Art. 115 of the Criminal Code of Ukraine, as it was done on mercenary motives, a deliberate murder qualifies in the case when the guilty, who deprived the life of the victim, wanted to receive in this connection material goods for himself or others (to take possession of a housing in our case), to receive or to preserve certain property rights, avoid material costs or obligations (to inherit) or to achieve other property rewards. In this sense, S. D. Berezhny concludes that it does not matter whether he has received the blame for the benefit that he wished to receive as a result of the murder, enough that he pursued this goal during his commission. The mercenary is acknowledged as mercenary irrespective of who is the victim: the owner of the dwelling or the person who has used such property or who has transferred this property to the collusion. The victim may be the person who after the death of which the perpetrator has received or hopes to obtain certain property rights[2].

Criminalistics has given some attention to the investigation of various murders[3], namely: murder with staging[4]; murders to order[5]; murders

collection] Odessa : Yurid. lit. Issue 44, p. 110–114 [in Ukrainian]; Antonov V. N. (1998) *Prestupnye posyagatelstva na rynok zhilya (kriminologicheskie i ugolovno-pravovye aspekty): avtoref. dis. ... kand. yurid. nauk* [Criminal Encroachments on the Housing Market (Criminological and Criminal-Legal Aspects) : extended abstract of candidate thesis]. Vladivostok, p. 1–3 [in Russian]; Chonyi A. (2001) *Rozsliduvannia vbyvstv, vchynenykh z metoiu zavolodinnia zhytlom poterpiloho: pochatkovyi etap. Pravo Ukrainy* [Investigation of murders committed in order to seize immovable property: Initial stage Legal Journal : Law of Ukraine]. № 8, p. 76–77 [in Ukrainian].

[1] The main stages of the will process are: the setting of the goal; election of means for its achievement; acceptance and execution of the decision (for more details see: V. V. Konovalova (2013) *Ubijstvo: iskusstvo rassledovaniya: monografiya. Izd-e 2-e dop. i pererab.* [Murder: the Art of Investigation : monograph, 2nd Ed. revised and supplemented]. Kharkiv : Yurait, p. 9 [in Ukrainian].

[2] Berezhny S. D. *Vidpovidalnist za vbyvstvo z koryslyvykh motyviv. Visnyk Verkhovnoho Sudu Ukrainy* [Responsibility for killing of mercenary motives. Bulletin of the Supreme Court of Ukraine]. № 11(99), p. 44–48 [in Ukrainian].

[3] Konovalova V. E. (2001) *Ubijstvo: iskusstvo rassledovaniya : monografia* [Murder: the Art of Investigation : monograph]. Kharkov : Fakt, p. 311 [in Ukrainian]; Synchuk V. L. *Rozsliduvannia vbyvstv: shliakhy vdoskonalennia: monohrafiia* (2005) [Murder Investigation: ways to improve : monograph]. Kharkiv : Kharkiv, yurid., p. 288 [in Ukrainian]; Kolmakov V. P. (1958) *Rassledovanie ubijstv: lekcii dlya studentov* [Murder Investigation: Lecture for students]. Moscow : Publishing house: VUSI, p. 78 [in Russian].

[4] Semenohov V. V. (2006) *Rozsliduvannya vbivstv, prihovanih inscenuvannyami: monografiya / za red. V. O. Konovalovoyi* [Investigation of murders hidden by inspiration: Manual edited by V. O. Konovalova]. Kharkiv : Publisher SPD, FO, Vapnyarchuk N. M., p. 144 [in Russian]; Konovalova V. E. (2001) *Ubijstvo: iskusstvo rassledovaniya: monografiya* [Murder: the Art of Investigation : monograph]. Kharkov : Fakt, p. 311 [in Russian].

[5] Shepitko V. Yu. (1998) *Osoblyvosti kryminalistychnoi kharakterystyky vbyvstv na zamovlennia. Vykorystannia dosiahnen nauky i tekhniky u borotbi zi zlochynnistiu: materialy nauk.-prakt. konf.* [Features of forensic characteristics of murders to order. Using the achievements of

committed by organized criminal groups and criminal organizations[1] etc. At the same time, the study of special literature, the analysis of investigative and judicial practice shows the absence of a separate forensic investigation methodology (micromethods) of murder in order to occupy a person's dwelling. Some scholars drew attention only to certain signs of committing such a type of murder, investigated some methods of their accomplishment, etc.[2] In particular, some scholars singled out the following indications of a murder associated with possession of housing: 1) the young or old age of the disappeared; 2) data absence on intention of the person to leave, reasons for concealing from relatives of his departure or leaving the house for a long time; 3) absence of a disease that can cause sudden death, loss of memory; 4) presence at the place of residence or work of the missing personal documents (passport, military ticket, identity cards, etc.); 5) presence of personal belongings, articles of hygiene, without which a person cannot do in the event of a prolonged absence; 6) presence of clothes in which the person disappeared; 7) lack of data on the removal from registration at the place of residence, dismissal or transfer to work in another area, withdrawal from military records, transfer of pension from the place of residence or permanent

science and technology in the fight against crime: Content Sci. Conf.]. Kharkiv, 19th of November. 1997, Kharkiv : Pravo, p. 25–31 [in Ukrainian].

[1] Zdorovko S. F. (2002) *Taktychni operatsii pry rozsliduvanni vbyvstv, shcho vchyniaiutsia orhanizovanymy hrupamy i zlochynnymy orhanizatsiyamy: avtoref. dys. … kand. yuryd. nauk* [Tactical operations while investigation of murders committed by organized groups and criminal organizations : extended abstract of candidate thesis]. 12.00.09. Kharkiv, p. 19 [in Ukrainian]; The same author. (2004) *Rozsliduvannia vbyvstv, shcho vchyniaiutsia orhanizovanymy hrupamy (typovi taktychni operatsii): monohrafiia / za red. V. Yu. Shepitka.* [Investigation of murders committed by organized groups (typical tactical operations): Manual edited by V. M. V. Shepitko]. Kharkiv : Grif, p. 176 [in Ukrainian]; *Nastilna knyha slidchoho: nauk.-prakt. vydannia dlia slidchykh i diznavachiv / M. I. Panov, V. Yu. Shepitko, V. O. Konovalova ta in*. (2007) [Investigator's Desk book: sci. pract. publications for investigators and detectives / M. I. Panov, V. Yu. Shepitko, V. O. Konovalova and others]. 2nd ed. revised supplemented. Kyiv : Publishing house In Yure, p. 728 [in Ukrainian]. Shepitko V. Yu. (1999) *Problemy formuvannia metodyky rozsliduvannia zlochyniv, shcho vchyniaiutsia orhanizovanymy zlochynnymy hrupamy. Problemy borotby z orhanizovanoiu zlochynnistiu v rehioni (na materialakh Kharkivskoi ta Poltavskoi oblas-tei) : zb. materialiv mizhnar. nauk.-prakt. konf.* [Problems of forming a method of investigation of crimes committed by organized criminal groups. Problems of combating organized crime in the region (on materials of Kharkiv and Poltava oblasts): Content of international sci. pract. conf.]. Kharkiv, April 26–27 1999. Kharkiv : Pravo, 2000 p. 158–162 [in Ukrainian].

[2] For more details see: Sereda D. M. Parnyka I. O. (2010) *Orhanizatsiini osnovy vyiavlennia operatyvnymy pidrozdilamy OVS zlochyniv, yaki poviazani z pryvatyzatsiieiu i vidchu-dzhennia zhytla v Ukraini. Visnyk zaporizkoho yuryd. in-tu Dnipropetr. derzh. un-tu vnutr. sprav.* [Organizational basis for the detection of operational units of the Ministry of Internal Affairs of crime, which are associated with privatization and alienation of housing in Ukraine. Bulletin of State Dnipropetrovsk University of Infernal Affairs] № 4(53). P. 173–178 [in Russian]; Volzhenkin B. (1983) *Kvalyfykatsyia ubyistva yz korystnykh pobuzhdenyi, sviazannoho s zavladenyem ymushchestvom. Sots. zakonnost.* [Qualification of killing from selfish motives associated with possession of property. Socialist legality]. P. 59–61; [in Russian]; Ilyina O. V. (2006) *Propozytsii stosovno vdoskonalennia okremykh kvalifikuiuchykh oznak (obtiazhuiuchykh obstavyn) koryslyvykh zlochyniv proty vlasnosti. Chasopys Kyivskoho universytetu prava: Ukrainskyi naukovo-teoretychnyi chasopys* [Proposals for the improvement of certain qualifying attributes (aggravating circumstances) of copious crimes against property. Journal of Kyiv University of Law: Ukrainian scientific and theoretical journal]. № 2. P. 165–171 [in Ukrainian].

residence; 8) presence of conflicts in the family; 9) presence of criminal ties, threats to the disappeared person; 10) presence of traces, the receipt of other information indicating a possible commission of a crime; 11) when from the explanations of the persons being examined there are specific suspects in the commission of a crime; 12) disappearances with motor vehicles or large amounts of cash, valuables; 13) presence of important cases in the victim (home repair has been started); 13) presence of important cases in the victim (home repair has been started); 16) failure to inform relatives about the disappearance of a person in law enforcement agencies[1]. Other scholars among the signs of the crime in question are: presence of missing documents in the passport table at the place of residence, indicating the desire to withdraw from a residence at a general, non-specific address or at a location that does not actually exist; after the alienation of the disappeared housing intended to live in conditions that clearly do not correspond to his lifestyle, habits, inclinations, physical abilities; after registration (residence permit) in the privatized dwelling, the missing person has not issued the right to own property; after the alienation of the dwelling was information that the missing dissatisfied with the concluded agreement and wanted to return all to her in the initial state; after the alienation of the apartment, the missing person received the money for the apartment, an additional payment, but there is information that he demanded from the buyer (intermediary) the fulfillment of all conditions of the agreement (additional payment of money, valuables, means of transport, land, etc.); information that at the time of the alienation of the home to the third person that was missing from the party different measures of influence were used to force him to conclude an agreement; the alienation of a home to an unidentified missing person belonging to the so-called risk group was conducted without the consent of the local authorities that monitor the lawfulness of such transactions; information that the disappeared, living in a communal apartment, did not give consent to a neighbor for the privatization of housing or for resettlement, while imposing unreasonable demands; information about the serious disputes between the

[1] Andriiv D. M. (2011) *Vstanovlennia vzaiemozviazku mizh faktamy znyknennia abo vbyvstva poterpiloho ta zavolodinnia pravom vlasnosti na zhytlo. Pravo i suspilstvo* [Establishing the relationship between the facts of the disappearance or murder of the victim and the assumption of ownership of housing. Law and Society]. № 3. P. 199–205; Zubritskyi M. (2010) *Problemni pytannia zdiisnennia prokurorskoho nahliadu za zakonnistiu diialnosti z rozkryttia vbyvstv, poviazanykh z bezvisnym znyknenniam poterpilykh i rozshukom bezvisty znyklykh osib. Visnyk prokuratury* [Problematic issues of the prosecutor's supervision of the lawfulness of the activities related to the disclosure of murders related to the disappearance of missing persons and the disappearance of missing persons. Bulletin of the Prosecutor's Office]. № 7. P. 33–34 [in Ukrainian]. Telegina T. D. (2012) *Voprosy rassledovanyia uholovnykh del, vozbuzhdennykh po faktu bezvestnoho yscheznovenyia cheloveka. Sovremennoe sostoianye y razvytye krymynalystyky : sb. nauch. tr. / pod red N. P. Yablokova y V. Yu. Shepytko* [Issues of investigation of criminal cases initiated by the fact of an unknown disappearance of a person. Current state and development prospects: Collection of scientific papers edited by N. P. Yablokov and V.Yu. Shepitko]. Kharkov : Apostil, p. 228–237 [in Ukrainian].

disappeared and the persons living with him; documents related to the privatization or alienation of housing, are marked with dates after the disappearance of the person[1]. Some scholars offer the following features: a) housing in the victim's third party who claims to have committed a victim of a particular transaction and documentary evidence of this transaction; b) the absence of a certain amount of money received from the victim[2]. However, it should be noted that the listing is not exhaustive. In this sense one should agree that the general for all these circumstances is their connection with the process of alienation of housing: the conclusion of an agreement with the realtor, the real estate agency, the notarial certificate, the state registration of the contract on the alienation of housing, registration and removal from the registration of the place of residence, other issues that are directly conditioned by changes in the place of residence and alienation of residential premises. Continuing it, it is necessary to proceed from such criteria as unpredictability, illogical, non-causal disappearance of the person and obviousness of the crime[3].

In forensic literature, attention is paid to the fact that the commission of a murder coupled with the possession of housing may precede the seizure of a person in order to force her to transfer ownership of housing to criminals[4]. In particular, D. M. Andriiv notes that the complexity of establishing the relationship between the disappearance of a person and the ownership of the right to own a property is that the notification of the disappearance of a person is not equivalent to the reporting of a crime, since in it, as a rule, there is no the data that would indicate the crime in relation to the missing person and cannot be the reason for the notification of the disappearance to the Unified Register of pre-trial investigations. An important issue is precisely the determination of the possibility of committing an offense against a person

[1] *Posobie dlya sledovatelya. Rassledovanie prestuplenij povyshennoj obshestvennoj opasnosti* (1999) [Guide for investigator. Investigation of crimes of high public danger] E. Babayev, A. Haiduk, A. Dvorkina and others; ed. N. A Selivanova, A. I. Dvorkina. 2nd ed. revised supplemented. Moscow, p. 207–208 [in Russian].

[2] Dvorkin A., Tolpekin K., Kasyanenko V. *Vozbuzhdenie ugolovnyh del ob ubijstvah, svyazannyh s otchuzhdeniem zhilya.* Zakonnost [Excite criminal cases of homicide related to alienation of housing. Legality]. № 1(747), p. 27–29 [in Russian].

[3] Andriiv D. M. Papers mentioned above.

[4] It should be noted that the issue of the prosecution of missing persons, as well as the identification of signs of violent death in relation to a person in the event of a notification about its disappearance, is today attracted considerable attention by many authors (For more details see: Zubrytkyi M. Papers mentioned above.) Bulletin of the Prosecutor's Office. 2010. № 7, p. 31–37 [in Ukrainian]; Trofimchuk V. Miroshnichenko S. *Rozshuk bezvisno znyklykh osib* [Search for missing persons]. Ibidem. 2009. № 12, p. 29–33 [in Ukrainian]; Kovalov A., Kravchenko Yu. (2010) *Fakty nasylnytskoi smerti mozhut zalyshytysia poza uvahoiu pravookhoronnykh orhaniv* [Facts regarding violent death may be left to the attention of law enforcement agencies]. Ibidem. № 12, p. 43–45 [in Ukrainian]; Stoyanov M. (2010) *Osoblyvosti perevirky doderzhannia vymoh zakonu pry reiestratsii zaiav ta povidomlennia pro zlochyn ta pry provadzhenni doslidchykh perevirok orhanamy vnutrishnikh sprav* [Features of verification of compliance with the requirements of the law when registering applications and notification of a crime and conducting investigatory inspections by internal affairs bodies]. Ibidem. № 4, p. 35–41 [in Ukrainian].

based on the outcome of an examination of an application or a notification of its disappearance. An operative solution to this issue can prevent the deprivation of life and / or possession of the right to own a proper living space[1]. Thus, at the beginning of 2004, in the course of checking the legality of the decisions made on each fact of the disappearance of citizens, the prosecutor's attention was drawn to the material on the fact of the disappearance of a citizen A., a pensioner who lived alone in a one-room apartment. From the explanations contained in the materials it was seen that A. in his apartment lived for a long time, no chronic diseases did not suffer, the intention was not to sell the apartment. Recently he only maintained relations with R. and T. — women of her age, who also applied for the disappearance of A., when, after repeated visits to the latter in December 2003, they learned that the apartment A. was sold to an unknown person, and about the place of stay of A. the new owners of the apartment is unknown.

During a survey of apartment owners, in which A. lived, it became known that they purchased the apartment legally under a contract of sale. However, this agreement was drawn up not on behalf of A., but on behalf of L., on behalf of A., which on December 21, 2003 was notarized by a notary public notary of the Kalinovsky notary district M. The notary was required to request a copy of the order, which A. gave L. While questioning the notary informed that he confirmed the fact of certification, however, he did not remember the specific circumstances in which he performed the notarial act. A handwritten study of signatures in the assignment was found that the signature on behalf of A. was executed not by A. but by another person. Analyzing the information gathered in the case and studying the circle of acquaintances L., in the field of view of the investigation a resident of the city of Vinnitsa V., with whom L. recently maintained friendly relations, came in contact. Skillfully planned simultaneous interrogations of V. and L., using the capabilities of operational and technical tools have given a positive result. As a result, information was received that L. on his behalf, on behalf of the owners in 2003, concluded two more contracts for the sale of apartments of the brothers Kh. And citizen T. who lived in the Zamostyansky district of Vinnytsia. The examination of these persons revealed that they were also missing and wanted by the Zamoshstansky District Public Prosecutor's Office. Thus, on April 31, 2004, V. reported that in March, August and December 2003, under a preliminary conspiracy with L. and her acquaintances S., in order to seize the apartments, they committed deliberate assassinations of the brothers Kh., T. and A., the troupes which they dug near the country's massifs on the outskirts of the city of Vinnytsia. In the course of the reproduction of the situation and the circumstances of the incident,

[1] Andriiv D. M. Papers mentioned above.

V. showed on the spot the events under which the murders were committed and where the corpses of the victims were buried. According to the findings of the forensic medical examination, the injuries found in the victims corresponded to the mechanism and tools of the murders, as pointed out by V. In addition, during the investigation, the involvement in the murder of T. and A. of other members of an organized criminal group: Ts and P. During the interrogations, they confessed that, according to the criminal distribution of roles, they transported the victims to the place of the murders and hid the corpses. It was also established that L. in August 2003 illegally acquired a TT gun for $ 250, which was resold by V. The pistol was removed, the materials of the criminal proceedings on the charge of L. according to Part 1 of Art. 262 of the Criminal Code of Ukraine is allocated in a separate proceedings[1].

Generalization results of criminal proceedings materials on the category of crimes under study allow us to draw the following conclusions. Killing for to taking possession of a person's person intersects with the commission of a wide range of other criminal acts. This is a crime in the field of official activity; crimes against public safety; crimes against property; crimes in the sphere of circulation of narcotic drugs, psychotropic substances, their analogues or precursors, as well as other crimes against the life and health of a person.

The activity of committing a murder combined with the possession of citizens' housing is not open to the public. A person can carefully conceal their actions by concealing them from others, combining them with other crimes (forgery of documents, fraud, abuse of office, etc.). The mechanism of committing murders combined with possession of housing includes:

1) the actions of the victim directly concerning the alienation of the home and the provocation to commit a murder. It is about provoking family conflicts, making reckless (or illegal) actions, applying for the provision of certain services to persons (including legal ones) who have a dubious reputation, etc.;

2) actions that are accompanied by violations by officials (housing maintenance organizations, notary offices, local governments and law enforcement agencies). Such actions are corrupt and involve violation of procedures that are regulated by the legislation of Ukraine and determine the certain procedure and terms of implementation of certain procedures for the alienation of housing (notarization of contracts, state registration of property rights, removal from registration at the place of residence and military registration, issuance certain duplicate documents, etc.);

[1] Shubin R. I. (2008) *Rozkryttia umysnykh vbyvstv, skoienykh z metoiu zavolodinnia zhytlom poterpilykh, vchynenykh orhanizovanoiu zlochynnoiu hrupoiu. Slidcha praktyka Ukrainy* [Disclosure of intentional murders committed with the purpose of taking over the shelter of victims committed by an organized criminal group. Investigative practice of Ukraine]. Issue 6, p. 43–47 [in Ukrainian].

3) actions of the offender who are directly related to the commission of the murder of a person and the alienation of the home. In this regard, in our opinion, it is advisable to distinguish between the following typical variants of the wrongful behavior of the perpetrator: a) the offender, after committing the murder of the owner of the dwelling, acquires (seizes, alienates) the right to his dwelling; b) the offender first acquires (acquires) the right to housing, and then directs his actions to deprive the victim of life (kills the owner of the dwelling); c) the offender simultaneously directs his actions to deprive the victim of life and alienation of his dwelling.

Peculiarities of the mechanism of committing the investigated murders is that the methods of committing in their structure (the content part) may contain actions: 1) of an active nature (causing bodily harm, the use of firearms and cold weapons, etc.), which contain explicit signs of influence and, accordingly, traces of the crime; 2) actions of active and passive nature. For example, if the person is not given the appropriate drugs (or not in the volume) causing biological death or abandonment in danger, improper performance of health care duties, failure to provide assistance to a person in a state of danger to life, etc. Such actions in a certain way complicate the detection of relevant traces of the crime and the causes of death.

Consequently, the main signs of murders associated with the alienation of a person's dwelling are:

— actions are characterized by direct intent, which are aimed at the alienation of housing (the right to housing) by depriving another person of life;

— is not a one-time act, but a system of interdependent actions and processes related to the preparation, execution and concealment of murder and direct alienation of housing;

— the specified type of intentional murder contains two objects which are protected by the current legislation of Ukraine (Articles 27, 30, 41, 47 of the Constitution of Ukraine), namely: life and health of the person and title to the object of real estate or obtaining the right dispose of this object;

— the victim can act as the owner of real estate (housing), as well as other persons (relatives and close people, tenants of housing, etc.);

— high degree of latency;

— high level of organization of criminals.

Thus, crimes connected with assassinations for the purpose of occupying a person's dwelling place are socially dangerous and cause a certain resonance in society in their discovery. The specifics of the investigated type of murders from the useful motives, as well as the lack of orderly and systematic information on the peculiarities of the investigation of such killings, have a negative effect on the detection and disclosure of such crimes. This, in turn,

causes some practical difficulties for practitioners in their investigations. In this sense, the opinion of M. Tkachenko, which indicates that such difficulties are connected with the fact that the investigator needs to establish not an external, accessible to perceive the side of the behavior of the offender, but his psychology: thoughts, motives, intentions, etc., is appropriate. Murder, combined with possession of housing, is carried out in order to seize the property of another person or to receive a certain reward upon the further sale of such property. This is its main goal and decisive stage of the criminal plan (committing a crime). The purpose in its essence is very similar to the motive for committing a crime, but in contrast to it has a number of significant differences. If the motive is an internal, conscious intention of a person to commit a crime, then the goal is what the perpetrator seeks to achieve, his idea of the ultimate outcome of the crime: consequences that will come, that is, the purpose is the perfect reproduction by the guilty person of the whole picture of the consequences which it strives to achieve by committing a socially dangerous act[1].

The above circumstances necessitate the development of a separate methodology (micromethods) for the investigation of murders associated with the possession of a person's possession. Such a forensic method (micro-methodology) must take into account forensic-significant features of the crime under investigation. In our opinion, the content of the methodology for the investigation of [2]assassinations, combined with the possession of a person's dwelling, should contain such constituent elements In our opinion, the content of the methodology for investigating murders, combined with the possession of a person's dwelling, should contain the following elements: 1) forensic characteristics; 2) typical investigative situations; 3) circumstances to be clarified; 4) typical investigative versions; 5) the interaction of the investigator with operational intelligence agencies; 6) tactics of investigative (search) actions.

[1] Tkachenko M. O. (2008) *Rozsliduvannia vbyvstv, vchynenykh z metoiu zavolodinnia nerukhomym mainom: deiaki elementy kryminalistychnoi kharakterystyky. Aktualni problemy derzhavy i prava : zb. nauk. prats.* [Investigation of murders committed in order to seize immovable property: some elements of forensic characteristics. Actual issues of State and Law: Collection of scientific papers]. Odessa : Yurid. lit. Issue 44, p. 110–114 [in Ukrainian].

[2] In Criminalistics, the most established is the following structure of forensic methodology: 1) forensic characteristic of the crime; 2) circumstances to be clarified; 3) Investigative (wanted) actions; 4) intermediate tasks and complexes of investigative (search) actions and operational-search activities; 5) Typical investigation situations and system versions; 6) measures to eliminate the counteraction to the investigation; 7) preventive activity of the investigator (see: Shchur B.V. (2010) *Teoretychni osnovy formuvannia ta zastosuvannia kryminalistychnykh metodyk : monohrafiia.* [Theoretical bases of formation and application of forensic methods : monograph. Kharkiv : Kharkiv, yurid., p. 320 [in Russian].

ПОСТАНОВЛЕННЯ ПРОБЛЕМИ ЩОДО РОЗРОБЛЕННЯ ОКРЕМОЇ КРИМІНАЛІСТИЧНОЇ МЕТОДИКИ РОЗСЛІДУВАННЯ ВБИВСТВ, ПОЄДНАНИХ ІЗ ЗАВОЛОДІННЯМ ЖИТЛОМ

В. С. Суходубов

Розглянуто передумови розроблення окремої криміналістичної методики (мікрометодики) розслідування вбивств, поєднаних із заволодінням житлом особи. Досліджено сутність і механізм учинення цього виду вбивств, а також виокремлено основні ознаки їх учинення. Запропоновано структурні елементи окремої криміналістичної методики (мікрометодики) розслідування вбивств, поєднаних із заволодінням житлом.

Ключові слова: убивство, поєднане із заволодінням житлом; механізм учинення вбивств, поєднаних із заволодінням житлом; структурні елементи методики (мікрометодики) розслідування вбивств, поєднаних із заволодінням житлом.

ПОСТАНОВЛЕНИЕ ПРОБЛЕМЫ О РАЗРАБОТКЕ ОТДЕЛЬНОЙ КРИМИНАЛИСТИЧНОИ МЕТОДИКИ РАССЛЕДОВАНИЕ УБИЙСТВ, СОПРЯЖЕННЫХ С ЗАВЛАДЕНИЕМ ЖИЛЬЕМ

В. С. Суходубов

Рассмотрены предпосылки разработки отдельной криминалистической методики (микрометодики) расследования убийств, сопряженных с завладением жильем человека. Обращено внимание на то, что среди факторов, которые обусловили рост преступности на рынке недвижимости, являются социальные противоречия (развитие рыночной экономики и института частной собственности, расширение рынка приватизации квартир, малоэффективная работа правоохранительных органов; падение уровня благосостояния граждан и др.).

Исследована сущность и механизм совершения этого вида убийств, а также выделены основные признаки их совершения. Определено, что механизм совершения убийств, сопряженных с завладением жильем, включает: 1) действия непосредственно потерпевшего по отчуждению жилья и провоцирование на совершение убийства; 2) действия, которые сопровождаются нарушениями со стороны должностных лиц (жилищно-эксплуатационных организаций, нотариальных контор, органов местного самоуправления и правоохранительных органов); 3) действия преступника, непосредственно связанные с совершением убийства лица и отчуждения жилья. Особенностями механизма совершения исследуемых убийств является то, что способы совершения в своей структуре (содержательной части) могут содержать действия: 1) активного характера (нанесение телесных повреждений, применение огнестрельного и холодного оружия и др.); 2) действия активно-пассивного характера (оставление в опасности, ненадлежащее исполнение обязанностей по охране здоровья, неоказание помощи лицу, находящемуся в опасном для жизни состоянии, и др.).

Предложено структурные элементы отдельной криминалистической методики (микрометодики) расследования убийств, сопряженных с завладением жильем, среди которых необходимо выделить следующие: 1) криминалистическую характеристику; 2) типичные следственные ситуации; 3) обстоятельства, подлежащие выяснению; 4) типичные следственные версии; 5) взаимодействие следователя с оперативно-розыскными органами; 6) тактика следственных (розыскных) действий.

Ключевые слова: убийство, сопряженное с завладением жильем человека; механизм совершения убийств, сопряженных с завладением жильем; структурные элементы методика (микрометодики) расследования убийств, сопряженных с завладением жильем.

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FORMS AND METHODS OF TRANSMISSION OF AUTHORITIES OR PERSONS AUTHORITIES BY LAW ENFORCEMENT ORGANIZERS

Forms and methods of exceeding power or official authority by law enforcement officers as structural elements of forensic characteristics are considered. It is noted that the use of the terms "form", and "method", to actions in excess of power or official authority testifies to the complicated structure of these unlawful acts, which appear on the forms, but are implemented in the system of certain deliberate illegal actions of law enforcement officers aimed at achieving a criminal goal. Form reflects the external aspect of actions in excess of power or official authority and the method is internal, that is, how the excess of authority or official authority was carried out, for example, through the giving of unlawful orders, orders to subordinates, signing documents on behalf of the superior, hitting the detainee, misuse of special means and the like. Therefore, in the forensic description of the excess of power or official authority by law enforcement officers, information should be reflected both on forms and ways of exceeding them.

Keywords: forensic characteristic of crimes, elements of forensic characterization of crimes, forms and methods in the structure of forensic characteristics of excess of power or official powers by law enforcement officials, classification of forms and methods of exceeding authority or official authority.

Formulation of the problem. Formation of forensic characteristics of excess of power or official powers by law enforcement officials, filling its contents with necessary, significant features is impossible without a detailed analysis of the forms and methods of making this kind of criminal offenses. It should be noted that these legal categories reveal the essence of the objective part of this crime, and their presence (proof) is crucial for incriminating an official to act in excess of his authority.

Relevance of research topic. The isolation and detailed analysis of the forms and methods of excessive power or official authority by law enforcement officers is crucial not only for the successful formation of the forensic characteristics of this variety of criminal offenses, but also to increase the effectiveness of investigating these criminal manifestations. The state of

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the development of this type of scientific regulations directly affects the quality of the organization of a specific criminal proceeding. Therefore, these developments should be based on the current achievements of science in Criminalistics and results of the advanced forensic practice synthesis.

Analysis of scientific research and publications. significant contribution to development of the conceptual foundations for the formation and application of forensic characteristics of crimes was made by such domestic and foreign scientists as V. P. Bakhin, R. S. Belkin, I. O. Vozhrin, A. F. Volobuev, V. G. Havlo, Yu. P. Garmaev, V. A Zhuravel, O. N. Kolesnichenko, V. O. Konovalova, V. Ye. Kornoukhov, S. Yu. Kosarev, O. F. Lubin, G. A. Matusovsky, V. O. Obraztsov, V. Tishchenko, S. N. Churilov, V. Yu. Shepitko, A. V. Shmonin, B. V. Shchur, M. P. Yablokov.

At the same time, in modern forensic literature, there are no scholarly works devoted to the formation and implementation of a forensic description of the excess of power or official authority by law enforcement officers and such an element as the forms and methods of such an excess, and that attention was not paid to the above-mentioned problems by the forensic scientists.

Formation of the purposes of the article. The purpose of the article is to develop, on the basis of modern advances in forensics, and generalization of advanced forensic practice such an element of forensic characterization as forms and methods of exceeding authority or official authority by law enforcement officers and making recommendations on the use of these data in a specific act of criminal proceedings.

Presentation of the main research material. It is noted that the use of the terms “form”, and “method”, to actions in excess of power or official authority testifies to the complicated structure of these unlawful acts, which appear on the forms, but are implemented in the system of certain deliberate illegal actions of law enforcement officers aimed at achieving a criminal goal. Therefore, in our opinion, in the forensic description of the investigated variety of criminal offenses should be both forms and methods of exceeding power or official authority.

It should be noted that in the objective part of the crime only in the general form defined forms of excess power or official powers of law enforcement officers. Thus, in Part 1 of Art. 365 of the Criminal Code of Ukraine (Criminal Code of Ukraine) refers to deliberate acts of an official who clearly go beyond the rights and powers granted to him, and Part 2 of this article defines those forms of excess of power or official authority that was accompanied by violence, the use of weapons or painful and insulting the victim's personal dignity, actions. On the ways as such in the cited norm of the Criminal Code of Ukraine is not mentioned at all, but because their definition in the forensic description becomes of special significance.

The complexity of actions that could be qualified as excessive authority or authority created different views of scholars and excessive discussions on this issue. Thus, according to A. Trinin, excess of power can be detected only in the commission of a crime of acts committed by a person subject' to the competence of a higher instance (an official or collegial body)[1]. O. O. Zhizhilenko attributes to such actions:

1) the extension of guilty, in contravention of the law, the powers granted to him (for example, 'mitigating or strengthening the punishment imposed on a person during his detention);

2) the commission' of an act of official crime of acts that fall under the competence of another person;

3) the commission by the official of actions that do not belong to the competence of any person;

4) the commission' by the subject of official crimes of acts that fall within its competence, in the absence of the necessary factual grounds for their performance; 5) taking actions without the permission of the superior boss[2].

In turn, B. Zdravomyslov believed that excess power could be:

1) the commission of an official actions that fall within the competence of a senior official or body of this or another agency;

2) the commission of actions that fall within the competence of an official, but without special permission; 3) actions that do not belong to the competence of any official[3]. Subsequently, he expanded this list by indicating actions that could only be taken collectively[4].

V. F. Kirichenko in the number of actions that can be qualified as excess of power are as follows: 1) the commission of actions that fall within the competence of a senior official of the same department;

2) the commission of actions that fall within the competence of an official of another department; 3) actions that can be taken only in certain circumstances[5].

A. V. Galakhov somewhat clarified the above suggestions, noting that, firstly, the excess of the authorities can be recognized as the subject of a crime of action, which falls within the competence of not only the higher, but also

[1] Trainin A. N. (1938) *Dolzhnostnye i hozjajstvennye prestuplenija* [Legal and economic crimes]. Moscow, p. 32[in Russian].

[2] Gigilinko A. A. (1927) *Dolzhnostnye (sluzhebnye) prestuplenija: (Glava III Ugolovnogo kodeksa). Prakticheskij kommentarij. Izd. 3-e, pererab. i dop*. [Official crimes: (Chapter III of the Criminal Code). Practical Comment. 2nd ed. revised supplemented]. Moscow, p. 37–39 [in Ukrainian].

[3] Zdravomislov B.V. (1956) *Dolzhnostnye prestuplenija : ucheb. posobie dlja studentov* [Official crimes : textbook for students]. Moscow : VNIIPP, p. 53 [in Russian].

[4] Zdravomislov B.V. (1975) *Dolzhnostnye prestuplenija. Ponjatie i kvalifikacija* [Official crimes: Concept and qualifications]. Moscow : Yurid. lit., p. 106 [in Russian].

[5] Kirichenko V. F. (1959) *Vidy dolzhnostnyh prestuplenij po sovetskomu ugolovnomu pravu* [Types of official crimes according to Soviet criminal law]. Moscow : Publishing house: AN SSSR, p. 27–28 [in Russian].

generally any official of the same department, and secondly, the commission of the act of official crime of action, which can only be committed by a collegial body[1].

The most complete list of actions that can be interpreted as excess of power or official authority, suggested D. D. Dojzhashvili, to which he attributed: The most comprehensive list of actions that could be interpreted as excess of power or official authority was proposed by D. D. Dojzhashvili, to which he relates:

1) the commission of actions that fall within the competence of a senior official of the same department in the order of obedience; 2) the commission of actions that fall within the competence of the official of the department, to which the guilty person does not obey;

3) commission of actions that fall within the competence of an official of another department;

4) commission of actions that fall within the competence of an official in special circumstances, which in this case are absent (including the commission of actions that may be performed in the absence of certain conditions that are present in this case and the commission of actions in the presence of special powers that are currently absent); 5) making actions that fall within the competence of the collegial body; 6) the commission of actions that no official or body has the right to do[2].

Summing up the results of scientific discussions and forensic practice, the Plenum of the Supreme Court of Ukraine in the ruling *On judicial practice in cases of excessive power or official authority* of 26.12.2003, indicated several forms of such an excess, for example: a) the commission of actions that are the competence of a superior official of this department or an official of another department; b) the commission of actions the execution of which is permitted only in special cases, — with special permission or with special order, in the absence of these conditions; c) making one-on-one actions that could only be done collectively; d) actions that nobody has the right to perform or to allow[3].

Regarding the excess of authority or official authority, which is implemented in the form of violence, the use of weapons or painful and those that offend the personal dignity of the victim (Part 2 of Article 365 of the

[1] Galakhova A.V. (1978) *Prevyshenie vlasti ili sluzhebnyh polnomochij. Voprosy ugolovno-pravovoj kvalifikacii* [Exceeding authority or official authority. Issues of criminal and legal qualification]. Moscow : Yurid. lit., p. 30–31 [in Russian].

[2] Doidgashvili D. (1989) *Ob"ektivnaja storona prevyshenija vlasti ili sluzhebnyh polnomochij. Sov. justicija* [Objective side Exceeding authority or official authority. Soviet Justice]. № 22, p. 25 [in Russian].

[3] *Zbirnik postanov Plenumu Verhovnogo Sudu Ukraïni z kriminal'nih sprav (1973–2011 roki) / uporjad.: V. I. Tjutjugin, Ju. M. Groshevij, O. V. Kaplina* (2013) [Collection of resolutions of the Plenum of the Supreme Court of Ukraine on criminal cases (1973–2011) / V. I. Ttiugin, Yu. M. Groshevyy, O. V. Kaplin]. Kharkiv : Pravo, pp. 232–235 [in Russian].

Criminal Code of Ukraine), the criminal-law doctrine refers to both physical and mental violence. Physical abuse means unlawful deprivation or restraint of freedom, strike, the task of the victim of beatings (multiple strikes without violating the anatomical integrity of the human body), torture, torture, causing bodily harm. In the event that the victim is subjected to violence as a result of moderate or severe bodily injury or death, the offender enters responsibility for the aggregate — for an official crime and for a crime against the individual.

Mental violence involves a threat to commit violent acts both to the victim and to his relatives; A threat to expose shameful information to the victim or his relatives. At the same time, threats, intimidation are used to ease the excess of power and force the victim to bring any action to the benefit or, conversely, to refuse to do so. The threats of physical violence are expressed in words, in writing, by gestures and usually come from a person who exceeds the power.

The use of weapons is an application in the process of exceeding power or official authority as a firearm (rifles, pistols, automatic devices, etc.) and cold weapons (Finnish knives, pins, daggers, bayonets, etc.). In this case, the use does not ’necessarily mean the direct use of the specified weapon for its direct purpose (aiming to shoot, strike a dagger, an example, a pistol, etc.), but also its demonstration itself in order to force anyone to commit any-which actions or vice versa — to force to abandon them The use of weapons is also carried out both for the purpose of physical impact on the victim, and for the purpose of psychic influence — to influence the psyche of the victim and to break his resistance. The fact that the law of the use of weapons is highlighted as a qualifying attribute, along with violence, can be explained by the legislator's desire to emphasize, in particular, the increased social danger of excess of power, which was accompanied by the use of weapons.

Painful — these are the actions that caused the victim physical pain, moral suffering. Such actions may consist in the unlawful use of special means (handcuffs, rubber batons, poison gases, etc.), in the prolonged deprivation of human food, water, heat, leaving it in harmful to health conditions, in the use of fire, electric current, acid, alkali, radioactive substances, poisons. Disadvantaged these— are actions that degrade human dignity, honor the victim, undermine its authority, committed in obscene form (for example, slap, various obscene gestures, spitting, personal review of a female employee of a customs body — a man). Painful actions, as well as offensive, and, equally, violence and the use of weapons are carried out in order to offend the victim's personal dignity and ultimately suppress his opposition to excessive power[1].

[1] Galakhova A.V. Papers mentioned above, p. 78–87; Baltyshev O. F. Rybachuk V. I. (2003) *Vidpovidalnist za zlochyny u sferi sluzhbovoi diialnosti: pytannia kvalifikatsii zlochyniv,*

The analysis of the current legislation, legal literature, and the results of the generalization of forensic practice gives grounds to assert that the following can be attributed to forms of excess of authority or official authority by law enforcement agencies:

— actions going beyond the limits of the rights and powers provided by law enforcement officers (amounted to 18.29 % (64 criminal proceedings (cases):

— actions that fall within the competence of any other (but not this) official (2.00 % of the total number of criminal proceedings (cases);

— actions which although they could be committed by this official, but only in the presence of special circumstances, in special circumstances, in a special situation, with special permission and in a special order (3.42 %);

— actions which are forbidden and no servant and under no circumstances authorized to give permission for their implementation (5,14 %);

— deliberately illegal detention, drive or arrest (3.72 %);

— violation of the right to protection (0,57 %);

— breach of privacy (2.29 %);

— destruction or damage to someone else's property (0,86 %);

— violation of the secrecy of correspondence, telephone conversations, telephone and other 'correspondence, which are transmitted by means of communication or through a computer using special means for the tacit removal of information (0,29 %);

acts related' to violence, use of weapons, or violations of the personal dignity of the victim, 81.71 % (286 criminal cases (cases):

— beating, torture (40.85 %);

— causing physical pain and moral suffering (22.00 %);

— torture (3.43 %);

— coercion to give testimony and message information (7.71 %);

— forced to sign illegally drawn protocols on administrative violations (5.14 %);

— illegal deprivation of liberty or restriction of freedom of action or movement (2.57 %).

As you can see, these types of criminal acts have different application practices. Out of 350 criminal proceedings (cases) about excess of power or official authority by law. enforcement officers, which are generalized, the actions of officials who are clearly beyond the scope of the rights and powers

peredbachenykh rozdilom 17 KK Ukrainy: navch. posibnyk [Responsibility for crimes in the sphere of official activity: issues of qualification of crimes provided for in section 17 of the Criminal Code of Ukraine : textbook]. Kyiv : In Yure, p. 19–21 [in Ukrainian]; Andrushko P. P. Stryxhevska A. A. (2006) *Zlochyny u sferi sluzhbovoi diialnosti: kryminalno-pravova kharakterystyka: navch. posibnyk* [Crimes in field of official activity: criminal legal characteristic : textbook]. Kyiv : Yuristkonsult, pp. 241–243 [in Russian].

granted to them amounted to 18.29 % (64 criminal proceedings, while actions related to the use of violence, weapons or painful acts and those that offend the personal dignity of the victim — 81.71 % (286 criminal proceedings (cases).

Implementation of these forms of excess of power or official authority is carried out through the application of certain methods of crime, that is, intentional actions of law enforcement officers aimed at achieving a criminal purpose. And if the form reflects the external aspect of such actions in excess, then the method is internal, that is, how the excess of authority or official authority was carried out, for example, by giving unlawful orders, orders to subordinates, signing documents on behalf of the higher persons, hitting the detainee, unlawful the use of special funds, etc.

Crime method of, as a legal category, serves as the object of studying the sciences of the criminal-law cycle, namely, criminal law, criminology and criminalistics, where each of these branches of knowledge studies it from its point of view, based on its own theoretical and applied tasks. Thus, specialists in the field of criminal law focus on object-subject conditions, means and tools of the method's use[1]. Judicial psychologists pay attention to psychophysiological and characterological features of a person, his knowledge, skills, skills, habits, which are reflected in certain ways of action[2]. Criminologists are primarily interested in the traces (the mechanism of formation, localization) that remain after the application of one or another method of criminal behavior[3]. This proves that for a comprehensive study of this category, the interdisciplinary approach should be considered the most appropriate[4].

Crime method is' determined both by objective (external) and subjective' factors, that is, those related to the person of the offender, factors. Objective' factors influencing the way of committing a crime include: the situation, place, time, tools for committing a crime. Subjective factors are: the purpose of crime, means, methods and conditions for its achievement; presence of criminal knowledge, experience, skills; psychological and physical features

[1] Panov V. I. (1987) *Osnovnye problemy sposoba sovershenija prestuplenija v sovetskom ugolovnom prave: avtoref. dis. ... d-ra jurid. nauk* [The main problems of the method of committing a crime in Soviet criminal law : extended abstract of Doctoral thesis]: 12.00.08. Kharkov, p. 6–7 [in Russian].

[2] Enikeev V. I. (2001) *Juridicheskaja psihologija: uchebnik dlja vuzov* [Legal psychology : textbook for high schools]. Moscow : NORMA; NORMA-INFRA, p. 105 [in Russian].

[3] Gavlo V. K. (1985) *Teoreticheskie problemy i praktika primenenija metodiki rassledovanija otdel'nyh vidov prestuplenij : monografija* [Theoretical problems and practice of applying the method of investigation of certain types of crimes : monograph]. Tomsk : Publishing house Tomsk State University, p. 176 [in Russian].

[4] Panov N. I., Shchur B.V. (2013) *Mezhdisciplinarnyj podhod k izucheniju sposoba sovershenija prestuplenija. Teorija ta praktika sudovoï ekspertizi i kriminalistiki : zb. nauk. pr. Vip. 13* [Interdisciplinary approach to studying the method of committing a crime. Theory and Practice of Forensic Science and Criminalistics Scientific paper collection Issue 13]. Kharkiv : Pravo, pp. 12–22 [in Russian].

of the offender's personality; the presence of 'contact with the victim, the subject of the attack.

Speaking about the ways of such an offense as excess of authority or official authority by law enforcement officers, it should be noted that they may be: a) full-fledged ones, that is, those involving the preparation, execution and concealment of a crime; b) limited to components, where only acts of committing and concealing are manifested; c) monosyllabic, which include only acts of committing a crime.

It should be noted that in forensic literature attempts were made to allocate and streamline ways of exceeding power or official authority by law enforcement officials. Thus, S. V. Mironov proposed a rather interesting system of ways to commit these crimes, although without taking forms of excess. In addition, they identify the following concepts as a form and method, which appear to be mistakenly composite, which include only acts of committing a crime.[1]. In our opinion, the ordering of the methods should take place exclusively to certain forms of excess of power or official authority by law enforcement officers. It is under such conditions that systematization of the methods of excess will have the optimal configuration and satisfy the needs of theory and practice.

Given the proposed approach, and also taking into account the results of the generalization of criminal proceedings (cases), among the ways of actions of an official who clearly go beyond the rights and powers that are granted to her, the following can be distinguished:

1) the provision of oral and written orders, orders, orders, permissions and approvals, in the form of resolutions, marks on documents (3.72 % of the total number of generalized criminal proceedings (cases). Thus, the forestry officer of the Zhubrovytsky forestry of the State Enterprise *Belokorovitsk L. N* 10.06.2015 in violation of the requirements of Articles 69, 90, 91 of the Forest Code of Ukraine, Articles 12, 40 of the Law of Ukraine *On Environmental Protection*, paragraphs 2, 3, 4 of the Procedure for the issuance of special permits for the use of forest resources, approved by the decision of the Cabinet of Ministers of Ukraine 23.05.2007 № 761, in the absence of permit documents, a harvesting ticket and without the registration of other documents necessary for its execution, illegally gave oral permission to harvest trees[2]. The head of the criminal investigation of the Gorodnitsky district police department of the Interior Ministry of Internal Affairs of

[1] Mironov S. V. (2013) *Sposoby (formy) perevyshchennia vlady abo sluzhbovykh povnovazhen spivrobitnykamy pravookhoronnykh orhaniv. Teoriia ta praktyka sudovoi ekspertyzy i kryminalistyky : zb. nauk. pr.* [Means (ways) of excess of power or official authority by law enforcement officers. Theory and Practice of Forensic Science and Criminalistics Scientific paper collection]. Issue 13. Kharkiv : Pravo, pp. 94–103 [in Russian].

[2] *Arkhiv Olevskoho raionnoho sudu Zhytomyrskoi oblasti* [Archive of Olevsky district court of Zhytomyr region]. Case number 287/439/16–k. Case number 287/439/16–k [in Ukrainian].

Ukraine in the Lviv region, having no right to dispose of vehicles detained by suspects, temporarily stored on a special site of the State Automobile Inspectorate of the Ministry of Internal Affairs of Ukraine in Lviv region, without the attention of authorized higher persons, and the court issued an order to the subordinates to sell these funds for the item acceptance of scrap[1];

2) entering of false data into official documents (4,00 %). So, the operatives authorized to the criminal prosecution sector of the 2nd Territorial Police Department of the Solomyansky Department of Internal Affairs of the Interior Ministry of Internal Affairs of Ukraine in Kyiv on 07.03.2013 arrived in the premises of the art cafe "Mokka", under the pretext of executing the order of the investigator, without having the legitimate grounds and authority, tried with the power to hold the cafe administrator, inflict bodily harm and use special tools — handcuffs. Then they wrote a report to the head of the SCR of the Ministry of Internal Affairs of Ukraine, in which they provided false information about the resistance of the detainee, and also made the administrative protocol KI № 0062839 on the commission of an administrative offense provided for in Part 1 of Art. 185 KUpAP, where there were knowingly false information that the detainee had committed malicious disobedience to police officers;[2];

3) drawing up false reports on administrative violations in order to improve the quantitative indicators of professional activity (3.15 %). Police inspectors of the platoon of service of the stationary post № 2 of the company of traffic police of the traffic police of the Interior Ministry of Internal Affairs of Ukraine in the Zaporizhzhya region for the improvement of performance indicators of 18.11.2012 made false information about the commission of an administrative offense provided for in art. 130 KUpAP; 130 KUpAP[3];

4) misleading detainees, suspects or promises that cannot be fulfilled in advance (1.42 %). Thus, the investigator of the JV LN at the TG Shevchenko station of the Ministry of Internal Affairs of Ukraine on the Odessa railway on 09.07.2914, obviously going beyond the rights and powers granted to him, knowingly knowing that the indictment in the criminal proceedings against the suspect was already directed to the court, and he is not in a position to influence the final court decision, promised to the suspect in case of transferring him UAH 5,000, that the court will not be sentenced to imprisonment;[4]

[1] *Arkhiv Pustomytivskoho raionnoho sudu Lvivskoi oblasti* [Archive of the Pustomyty District Court of Lviv Oblast]. Proceedings № 1–кп/450/43/14 [in Ukrainian].

[2] *Arkhiv Solom'ianskoho raionnoho sudu m. Kyieva* [Archive of the Solomyansky District Court of Kyiv]. Proceedings № 1–кп/760/52/16 [in Ukrainian].

[3] *Arkhiv Khortytskoho raionnoho sudu m. Zaporizhzhia* [Archive of the Khortytsky District Court in Zaporizhzhya]. Proceedings № 1–кп-337–2/2014 [in Ukrainian].

[4] *Arkhiv Prydniprovskoho raionnoho sudu m. Cherkasy* [Archive of Pridneprovsky District Court in *Cherkassy]. Case number № 711/108/15–к* [in Ukrainian].

5) gross violation of job descriptions (5.43 %). Thus, a trainee of a district inspector, being in the daily uniform of a temporary detention facility, on 12/04/2010 grossly violated the Instruction "On the work of temporary detention centers of internal affairs", as well as "On the organization of convoying detainees and detained persons in the organs of internal affairs of Ukraine", without the support of the second outgoing person, opened simultaneously the door of several cameras for the release of the detainees to the yard for a walk', which was used by two detainees, having escaped from the ITT Melitopol police department of the Ministry of Internal Affairs in Zaporozhye yay area.[1]. Inspector of the Supervision and Safety Department of the Berdichev Correctional Center № 108 of the UDPSU of Ukraine in the Zhytomyr region in violation of Clause 4 of Art. 59 of the Criminal-Executive Code of Ukraine, instructions of the inspector of the supervisory and security department on November 25, 2012 released the prisoners in their free time outside of the protected territory who escaped from the place of deprivation of liberty[2]. Paramedic of a specialized tuberculosis hospital at the Kremenchug penal colony № 69 UDPT of Ukraine in the PoltaV. A. region, deliberately breaking the underground. 6, 13, 14 p. 1 and subs. 2 p. 2 p. 18 of the Law of Ukraine *On the State Criminal Execution Service of Ukraine*, provisions on a specialized tuberculosis hospital, a job description of the paramedic of the tuberculosis department, orders and instructions of the State Penitentiary Service Administration, 04/24/2014 concealed from the regular and illegally attempted to bring into the territory of the colony prohibited narcotic drugs[3];

6) use of received official information with a mercenary purpose (0,57 %).

Among the ways of an official's actions that are 'related to violence, use of weapons, or to the detriment of the dignity of the victim, the, most common are:

Intimidation, blackmail, strikes, arm wrestling, bullying, use of special means, including prohibited (70.29 %). So, the district inspector of the Sosnovsky District Police Department in Cherkasy, Cherkasy region, June 29, 2016, having sent the cartridge to the chamber, threatened the detainee with a weapon[4]. special envoy of the special unit "Berkut", who participated in the dispersal and power liberation of the Independence Square on February 18, 2014 applied against protestants prohibited on the territory of Ukraine special means of production of the Russian Federation, namely: light-noise grenades

[1] *Arkhiv Melitopolskoho miskraionoho sudu Zaporizkoi oblasti* [Archive of Melitopol City District Court of Zaporizhzhia Oblast]. Case number № 320/8828/13–к [in Ukrainian].

[2] *Arkhiv Radomyshlskoho raionnoho sudu Zhytomyrskoi oblasti* [Archive of the Radomyshl district court of Zhytomyr region]. Case number № 289/2142/13–к [in Ukrainian].

[3] *Arkhiv Kriukivskoho raionnoho sudu m. Kremenchuka Poltavskoi oblasti* [Archive of the Kryukivsky District Court in Kremenchug, Poltava region]. Case number № 537/2740/14–к [in Ukrainian].

[4] *Arkhiv Cherkaskoho raionnoho sudu Cherkaskoi oblasti* [Archive of Cherkasy District Court of Cherkasy region]. Proceedings № 1–кп/707/8/17 [in Ukrainian].

"Fakel-S", "Zorya-2", "Flame-M "hand grenades of irritating and light-noise action", Drofa "hand-made aerosol grenades", Drift-2"[1]. Senior Inspector of the Platoon of Fire Training of the 2nd Company of the Special Purpose of the Armed Forces 3028 of the Internal Troops of the Ministry of Internal Affairs of Ukraine on January 22, 2014 aimed at striking one of the participants of the protest action near the "Dinamo", stadium named after V. Lobanovsky in a face with a 'wooden legend of the ice-fountain, which caused bodily injuries and physical pain[2]. Commander of the first operative platoon of the special police headquarters "Berkut", of the Ministry of Internal Affairs of Ukraine in Zhytomyr region on 19.10.2012 delivered the patrol to the regional narcological dispensary of the detainee for the study of the state of alcoholic 'intoxication. In the premises of the dispensary, he took the victim's arm and sharply led her behind her, turning her around the axis out. As a result of this violence, the injured person suffered bodily injuries in the form of an oblique screw-shaped fracture of the middle third of the right shoulder bone with divergences along the lines of the fracture, which led to a long-term health 'disorder[3]. Operators of the Criminal Investigation Department of the Frunzensky RV KhMU GUMVD in the Kharkiv region on 13.12.2010 put the victim in a Mazda car in a force and carried it to the police station. If the victim intends to call his wife and inform him that he is being taken to the police, one of the employees of the criminal investigation knocked out his phone and began to strike with his fist in the back of the head. Arriving at the district police station, the employees did not register in the established order the fact of detention and delivery, brought the victim to the office number 28 of the criminal investigation sector, tied hands, put a gas mask in which the hose was put on smoked cigarettes, the victim, inspired by the smoke, fainted. Filmed several times with a gas mask, brought the victim to heart, beat again, demanding the address of a person who allegedly attacked the father of one of the employees of the criminal prosecution[4];

2) prolonged deprivation of human food, drink or heat (8.00 %). So, employees of the sector of struggle against illicit drug traffic of the linear department at Art. Darnytsia of the Ministry of Internal Affairs of Ukraine on the South-Western Railway dated November 30, 2010 was taken to the detachment department, closed them in a free office and held for several days in order to convince the latter where they store narcotic drugs. The detainees

[1] *Arkhiv Podilskoho raionnoho sudu m. Kyieva* [Archive of the Podilsky District Court of Kyiv]. Proceedings № 1–кп/758/581/15 [in Ukrainian].

[2] *Arkhiv Pecherskoho raionnoho sudu m. Kyieva* [Archive of the Pechersk District Court of Kyiv]. Case number № 757/11939/14–к [in Ukrainian].

[3] *Arkhiv Zhytomyrskoho raionnoho sudu Zhytomyrskoi oblasti* [Archive of Zhytomyr district court of Zhytomyr region]. Case number № 278/633/14–к [in Ukrainian].

[2] *Archive of the Frunzensky District Court in Kharkiv* [Archive of the Frunzensky District Court in Kharkiv] [in Ukrainian].

were deprived of the opportunity to move freely, to eat properly, to consume technical water, and to make their natural needs in plastic bottles[1]; unlawful placement of a person into a camera for admin-detained on the basis of falsified protocols on administrative violations (1.71 %). So, the district inspector of the Dykansky MIA department of Ukraine in the PoltaV. A. region dated August 11, 2009, without proper registration and sufficient legal grounds, placed the victim in the camera for the administrative detainees and kept him for several hours in order to obtain a confession about the location of a self-made firing device to improve the performance of his own work[2];

4) involuntary detention of a victim in a certain place (1.14 %). Thus, the operatives authorized the criminal investigation department of the Mosckovskyi department of Ukraine in the Kharkiv region outside the administrative territory of the detained the victim and took him to the country where they were locked with handcuffs to the battery and kept for several days, demanding from their parents 8 thousand UAH for not bringing their son to criminal liability;

5) attempts to remove the victim by means of official transport and carry out a physical assault with him or demand for money (0,57 %). Thus, the patrol staff of the battalion of the road patrol service for servicing the roads of the State Department of Internal Affairs of Ukraine in the Kharkiv region together with the chief inspector of the department for combating the illegal movement of drugs and weapons of the smuggling service and violations of the customs rules of the Kharkiv Customs on April 28, 2010 stopped the car and ordered the victim to leave the car for a vehicle inspection and personal belongings. When the driver tried to photograph the illegal actions of law enforcement officers, one of them struck him and handcuffed him. Then they put in the car interior a victim pack of black color, rewind with a transparent sticky tape, with unidentified contents. By creating an impression on the victims that they would be held criminally responsible for committing a crime in the area of illicit drug trafficking, they forcibly put them in various cars and carried in an unknown direction, constantly threatening and demanding 2 thousand dollars for non-prosecution[3].

Conclusions Consequently, the forms and methods of exceeding power or official authority by law enforcement officers belong to the defining elements of the forensic characteristics of this category of criminal offenses, causing the specifics of correlations with the subject of crime, instruments, place, time and other circumstances.

[1] *Archive of the Pechersk District Court of Kyiv* [Archive of the Pechersk District Court of Kyiv]. Case number № 1/753/33/14 [in Ukrainian].

[2] *Archive of Kotelvsky district court of Poltava region* [Archive of Kotelvsky district court of Poltava region]. Case number № 1613/343/2012 [in Ukrainian].

[3] *Archive of the Krasnogradsky District Court of the Kharkiv Region* [Archive of the Krasnogradsky District Court of the Kharkiv Region]. Proceedings № 1–кп/626/2/2015 [in Ukrainian].

ФОРМИ ТА СПОСОБИ ПЕРЕВИЩЕННЯ ВЛАДИ АБО СЛУЖБОВИХ ПОВНОВАЖЕНЬ СПІВРОБІТНИКАМИ ПРАВООХОРОННИХ ОРГАНІВ

М. С. Федоренко

Розглянуто форми та способи перевищення влади або службових повноважень співробітниками правоохоронних органів як структурні елементи криміналістичної характеристики. Зазначено, що застосування термінів «форма» й «спосіб» до дій з перевищення влади або службових повноважень пересвідчує про ускладнену структуру цих протиправних діянь, які зовні виявляються у формах, а реалізуються в системі певних умисних протиправних дій правоохоронців, спрямованих на досягнення злочинної мети. Форма відбиває зовнішній аспект дій із перевищення влади або службових повноважень, а спосіб — внутрішній, тобто як, яким чином здійснено перевищення влади або службових повноважень, наприклад, через віддавання неправомірних наказів, розпоряджень підлеглим, підписання документів від імені вищестоящих осіб, нанесення ударів затриманому, неправомірне застосування спеціальних засобів тощо. Тому, в криміналістичній характеристиці перевищення влади або службових повноважень співробітниками правоохоронних органів має відбиватися інформація як про форми, так і способи перевищення.

Ключові слова: криміналістична характеристика злочинів, елементи криміналістичної характеристики злочинів, форми й способи в структурі криміналістичної характеристики перевищення влади або службових повноважень співробітниками правоохоронних органів, класифікація форм і способів перевищення влади або службових повноважень.

ФОРМЫ И СПОСОБЫ ПРЕВЫШЕНИЯ ВЛАСТИ ИЛИ СЛУЖЕБНЫХ ПОЛНОМОЧИЙ СОТРУДНИКАМИ ПРАВООХРАНИТЕЛЬНЫХ ОРГАНОВ

М. С. Федоренко

Рассмотрены формы и способы превышения власти или служебных полномочий сотрудниками правоохранительных органов как структурные элементы криминалистической характеристики. Отмечено, что использование терминов «форма» и «способ» к действиям по превышению власти или служебных полномочий свидетельствует об усложненной структуре этих противоправных деяний, которые внешне проявляются в формах, а реализуются в системе умышленных противоправный действий правоохранителей, направленных на достижение преступной цели. Форма отражает внешний аспект действий по превышению власти или служебных полномочий (заведомо незаконные задержания, привод или арест; нарушение права на защиту; нарушение неприкосновенности жилья; уничтожение или повреждение чужого имущества; нарушение тайны переписки, телефонных разговоров, телефонной и другой корреспонденции, которые передаются средствами связи или через компьютер; принуждение давать показания и сообщать сведения, подписывать незаконно составленные протоколы; лишение свободы или ограничение свободы действий или перемещения), а способ — внутренний, то есть как осуществлено превышение власти или служебных полномочий, например, через отдавание неправомерных приказов, распоряжений подчиненным, подписание документов от имени вышестоящих лиц, запугивание, шантаж, нанесение ударов задержанному, издевательство, неправомерное применение специальных средств, в том числе и запрещенных; продолжительное лишение человека пищи, питья или тепла; незаконное помещение лица в камеры для администрированных на основании составления фальсифицированных протоколов об административных правонарушениях; насильственное удержание пострадавшего

в определенном месте; стремление силой вывезти пострадавшего служебным транспортом и осуществить с ним физическую расправу, или требование денежных средств и т. п. Поэтому, в криминалистической характеристике превышения власти или служебных полномочий сотрудниками правоохранительных органов должна отражаться информация как о формах, так и о способах превышения.

Ключевые слова: криминалистическая характеристика преступлений, элементы криминалистической характеристики преступлений, формы и способы в структуре превышения власти или служебных полномочий сотрудниками правоохранительных органов, классификация форм и способов превышения власти или служебных полномочий.

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FALSIFIED MEDICINAL PRODUCTS AS AN OBJECT OF RESEARCH IN CRIMINALISTICS

Falsified medicines were investigated as a subject of a criminal encroachment in the structure of forensic characteristics of falsification and circulation of counterfeit medicines. The main channels and sources of receipt of falsified medicinal products on the pharmaceutical market of Ukraine are analyzed. It is proved that the construction of an effective methodology for investigating the category of crimes under investigation involves forensic analysis of the subject of a criminal offense and its significance for the construction of forensic characteristics of the crimes in question. The concept and criminally significant signs of counterfeit medicines are investigated. Forensic classification of counterfeit medicines for: the method of forgery is proposed; pharmacological group; external form; a way of protecting packaging or labels; the legal regime for the treatment of a medicinal product. Scientific approaches and suggestions for solving the discussion problems of forensic research of counterfeit medicines and their significance for the formation of the methodology of investigation of this category of crimes are formulated.

Keywords: Counterfeit medicines, subject of a criminal offense, circulation of counterfeit medicines, forensic characteristic of falsification and circulation of counterfeit medicines.

The modern period of formation of a law-governed state in Ukraine is characterized by aggravation of the general criminal situation connected with the deepening of the economic, social and political crisis in society. This, in turn, resulted in a significant increase in crime. Among crimes, which today

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are especially dangerous and quite common in the field of human health, are crimes related to the falsification and circulation of counterfeit medicines. It is known that the physical expression of the sphere of healthcare and, in particular, pharmaceutical activity is, first of all, medicinal products, the main property of which is the ability to treat a person. Significant needs of the population in these products resulted from the presence of astronomical profits from the pharmaceutical industry. That is why medicines often become the subject of various types of crimes, such as smuggling, falsification and circulation of counterfeit medicines, violations of the established order of preclinical study, clinical trials and state registration of medicines. Falsified drugs are the subject of research in forensic science, in particular when developing the structural elements and the content of forensic characteristics of such crimes.

The subject of a criminal encroachment as a structural element of the forensic characteristics of the falsification and circulation of counterfeit drugs is of great importance for the detection, disclosure and investigation of this category of crimes, since it is an important source of factual information which in the course of the investigation enables it to be highly probable to simulate the whole process of committing a crime and to assemble it. evidence of such criminal activity. The above leads to the need for in-depth analysis and investigation of the forensic nature of counterfeit medicines as a subject of a criminal offense. At the same time, the construction of an effective methodology for investigating the category of crime under investigation involves forensic analysis of the subject of a criminal offense in the system of criminalistic characteristics of the crimes in question.

The subject of direct encroachment in forensic literature[1] is defined as the most diverse physical objects (things and objects) of organic and inorganic origin, which are the material expression of social relations. In this case, physical objects are characterized, above all, signs of aggregate state — solid, liquid, flowing, gaseous; for consumer purposes — objects of labor (tools, tools), everyday life, a toilet, ornaments, etc.; physical and chemical properties — color, weight, size, volatility, divisibility, chemical activity, etc. Characteristics of the subject of a crime reflects both its general (generic, species), and individual (formal, essential, content, functional, etc.) characteristics, other varied parameters, internal and external relations and relationships. It should be noted that not all signs are taken into account, but

[1] Saltevskiy M. V. (2001) *Kryminalistyka: pidruchnyk: u 2 ch*. [Criminalistics : textbook. 2 vol.]. Kharkiv : Consum, p. 2 [in Ukrainian]; Matusovskyi G. A. (2001) *Kryminalistychna kharakterystyka zlochyniv. Kryminalistyka : pidruchnyk / za red. V. Yu. Shepitka*. [Forensic description of crimes. Criminalistics: Manual edited by V. M. V. Shepitko]. Kyiv : In Yure, p. 371 [in Russian]; Ermolovich V.F. (2001) *Krymynalystycheskaia kharakterystyka prestuplenyi* [Forensic classification of crimes]. Minsk: Amalfea, p. 151–154 [in Russian] and others.

only those that are significant, significant from the point of view of the adoption and implementation of forensic and legal decisions[1].

Forensic feature of the subject of a criminal offense other than criminal law is that it should be the perception and tracking objects of living and inanimate nature, their qualitative and quantitative indicators, physico-chemical and consumer properties that individualize the object in the material world. Interaction of the offender with the object of the attack is associated with the occurrence of various changes in the subject. These changes are localized: 1) in the place of a criminal incident; 2) on the object itself and its parts; 3) in the places of his next finding, concealment, realization; 4) the offender (his body, clothing, etc.); 5) on the tools of the crime, technical means used by the offender[2].

Consideration of the subject of falsification and circulation of counterfeit medicines from forensic positions enables us to study the whole range of features of this element of forensic characteristics, which ensures the implementation of its cognitive search function. The latter is quite complex and diverse in character and, first of all, is of interest in terms of detecting the objects of encroachment, the establishment and disclosure of the person who committed such a crime, as well as the identification of material, perfect traces and other circumstances of the committed act. In connection with this study of the subject of direct encroachment is aimed at studying its features.

In forensic literature, the subject of a criminal offense, as a rule, is determined by disclosing the totality of its specific properties and attributes. Thus, in particular, VF Ermolovich defines the object of a criminal encroachment as things and objects that are characterized by the type, purpose, category, features of the object (size, weight, density, etc.) and the peculiarities of the accompanying objects (packaging, containers) capable of while interacting with other objects before changing and fixing these changes[3]. M. V. Saltevsky under the subject of a criminal assault understands a variety of physical objects (things and objects) that are characterized by signs of their aggregate state, consumer purpose, physical and chemical properties[4]. According to V. A. Zhuravlya, the object of a criminal encroachment should be defined as things of the material world, the possession, destruction, deterioration of the state, causing harm to which the criminal intent was directed[5].

[1] Obraztsov V. A. (1996) *Osnovy kriminalistiki: uchebnik* [The essentials of Criminalistics: manual]. Moscow : Yourist, p. 23 [in Russian].

[2] *Kriminalistika: uchebnik / pod red. Obrazcova V. A.* (1995) [Criminalistics: manual/edited by Obraztsov V. A.]. Moscow : Yourist, p. 41 [in Russian].

[3] Ermolovich B. F. Papers mentioned above, p. 153.

[4] Saltevskiy M.V. Papers mentioned above, p. 268.

[5] Zhuravel V. A. (2018) *Predmet zlochynnoho posiahannia. Velyka ukrainska entsyklopediia. T. 20: Kryminalistyka, sudova ekspertyza, yurydychna psykholohiia* [Subject of a criminal

In our opinion, the subject of a criminal offense should be understood as the most diverse objects of the material world (objects and objects) of organic and inorganic origin, which are characterized by the type, purpose, category, the presence of certain physical and chemical properties and signs of aggregate state, features of related objects (packaging, containers) capable of interacting with other objects before changing and fixing these changes.

Consideration of the subject of an encroachment from a forensic position enables us to study the entire variety of features of this element of forensic characteristics, which provides the realization of its cognitive-search function. The latter is quite complex and diverse in nature and, first of all, is of interest in terms of detecting objects of encroachment, establishment and disclosure of the person who committed the crime, as well as revealing material, ideal traces and other circumstances of the commission of the act. In addition, the precise establishment of the subject of a criminal offense makes it possible to distinguish one offense from another, adjacent to it. Signs of the subject of the attack may act as a mitigating or aggravating circumstance of the same crime or turn the crime into a particularly serious form[1].

Signs of the subject in the forensic description may have a different connection with other elements of forensic characteristics, in particular, the subject of the attack — the methods of committing — typical traces of the crime — data on the identity of the offender. First of all, the characterization of the subject of a crime is important for the further establishment of the offender. So, one or another subject can be made, for example, conclusions about the purpose of theft. Establishing relations and relationships between the subject of the attack and the subject of the crime is directly relevant to the search of the offender and the establishment of his person. The subject of a criminal offense is naturally associated with the age of the offender, his specialty, some peculiarities of the individual[2].

Consequently, the subject of a criminal encroachment on the falsification and circulation of counterfeit medicines is essential for the formation of the forensic characteristics of this crime. He determines the method of committing a crime (specific techniques and their combinations, tools, means) and the circumstances of the commission of a crime (place and time); contains traces of a crime and in its properties may indicate ways to find traces, being a source of forensic-meaningful information; interconnected with the person

encroachment. Veluka ukrainska urydychna enciclopedia. vol. 20: Criminalistics, forensic examination, legal psychology], p. 643 [in Ukrainian].

[1] Shepitko V. Yu. (2016) *Predmet zlochynnoho posiahannia. Kryminalistyka : pidruchnyk / za red. V. Yu. Shepitka. 5-e vyd., pererobl. ta dopov*. [Subject of a criminal encroachment. Criminalistics: Manual edited by V. Yu. Shepitko. 5th ed. revised and supplemented]. Kyiv : In Yure, p. 427, 428 [in Ukrainian].

[2] Kolesnichenko A. N., Konovalova V. E. (1985) *Krymynalystycheskaia kharakterystyka prestuplenyi: uchebnoe posobye* [Forensic classification of crimes. textbook]. Kharkov : Yurid. int-t, p. 44 [in Russian].

of the offender (as a rule, the purpose of criminal activity, indicates the features of the offender, the availability of professional skills, skills, determines the motive of the act).

According to Art. 2 of the Law of Ukraine "On Medicinal Products", a falsified medicinal product is a medicinal product deliberately marked with a non-identical (inappropriate) information (one or more of them) about a medicinal product with the corresponding name appearing in the State Register of Medicinal Products of Ukraine, as well as the medicinal product intentionally falsified in another way and does not correspond to the information (one or more of them), including the composition, about a medicinal product with the corresponding name, which is entered into the State Register of Medicinal Products of Ukraine.

Subjects of a criminal offense of the crimes under consideration are counterfeit medicines. By definition, a counterfeit (counterfeit) medicinal product by the WHO is a product with a label that does not correspond to the actual contents of the drug and / or the manufacturer or whose origin is deliberately concealed. There are several basic types of counterfeits, namely: 1) a preparation in which there is no active substance at all; 2) a preparation in which all the substances are present, but it is not known under what conditions and technologies they are received; 3) a drug in which the more expensive substance is changed to the same, but cheaper. Most often counterfeit drugs that are in daily demand and advertised on television and radio, include painkillers, antibiotics, psychotropic substances.

The main sources of receipt of such medicines in the pharmaceutical market of Ukraine are: smuggling by manufacturers and distributors of medicines from abroad under the guise of other goods; re-packaging of protracted drugs for the purpose of further implementation; issue of unidentified enterprises of counterfeit medicines using high-tech equipment with the help of qualified expert. In order to strengthen state control over the quality of medicines and to combat the production and distribution of counterfeit drugs in Ukraine, by the order of the State Committee of Inspection of the Ministry of Health created a permanent working group on tracking the distribution of counterfeit medicines, which can be used for the production of counterfeit medicines.

To characterize falsified drugs as a subject of a criminal offense, it is first necessary to distinguish between criminologically significant features of the drug itself as the source element of this concept. According to Art. 2 of the Law of Ukraine *On Medicinal Products* (dated 04.04.1996, № 123) a medicinal product is any substance or a combination of substances (one or more AIF and auxiliary substances) having properties and intended for the treatment or prevention of diseases in humans, or any substance or combination of substances (one or more AFIs and excipients) that can be used

to prevent pregnancy, to restore, correct or modify physiological functions in humans by pharmacological, immunological or metabolic action, or for all rehabilitation of medical diagnosis.

The components of the medicinal product are divided into active pharmaceutical ingredients (substances that have a pharmacological or other direct effect on the human body, AFI) and auxiliary substances (any substance of a medicinal form that is not an AFI or a finished medicinal product and therefore does not carry pharmacological, immunological or diagnostic action, is included in the medicinal product and is necessary for its manufacture (manufacturing), storage or application). Depending on the origin of the AFI, medicinal products of natural, synthetic or biotechnical origin are isolated; 2) they have certain physical and chemical properties: since the totality of properties gives the drug the ability to meet the needs according to the purpose. The main property of a medicinal product is the effect on the human body through pharmacological, immunological or metabolic action; 3) medicinal products have their own special purpose, because in this regard they can be pharmacological, immunological, metabolic or diagnostic; 4) medicinal products as objects of the material world always have a certain external form, which consists of the external form of the medicinal product itself (dosage form) and the outer form of packaging. Depending on the dosage form, spraying drugs, soft medicines, drugs in the form of liquid or solid substances can be used. Each dosage form has specific physico-chemical and consumer properties, characteristic auxiliaries and necessary devices and mechanisms for their use. Concerning the packaging of a medicinal product, depending on the direct contact with the medicinal product, the primary (direct contact with the medicinal product and promotes preservation of its basic properties) and secondary packaging (in which the medicinal product is put in the primary packaging and which performs the protective function of the medicinal product and the primary packaging); 5) medicinal products have a specific legal regime of treatment, that is, the creation and circulation of a medicinal product presupposes compliance with the procedure established by law, in particular, only medicinal products, the information of which is entered in the State Register of Medicinal Products of Ukraine, is permitted for the production and use in medical practice. In addition, the process of production, storage, transportation and handling of medicinal products should meet the requirements that exclude the possibility of negative influence and guarantee the safety of the medicinal product.

In the broadest sense, falsification of medicinal products can be considered as actions aimed at deteriorating consumer properties of the product or reducing its amount when storing the most characteristic indicators that are not essential to the consumer. Therefore, in a fairly generalized form, falsification of medicinal products can be defined as a change in the

characteristics or properties of drugs. Consequently, a medicinal product is falsified, information about the name, registration number, expiration date, composition, producer and applicant of which do not correspond to the information contained in the State Register of Medicinal Products of Ukraine. Without going into a detailed analysis of each element of such a definition, we note that the binding to the compliance of the medicinal product with the information contained in the State Register of Medicinal Products of Ukraine has some administrative value, since it facilitates the control of the circulation of medicinal products. However, this definition has a number of shortcomings, because it does not contain all the set of features that can be falsified. In fact, counterfeit medicines do not include inappropriate medicines. In accordance with the order of the Ministry of Health of Ukraine (hereinafter — the Ministry of Health of Ukraine) dated 09/29/2014, № 677 *On Approval of the Procedure for Quality Control of Medicinal Products in the Wholesale and Retail Trade*, low-quality medicinal products — medicines, the quality of which does not meet the requirements of normative documents, medicines that have undergone mechanical, chemical, physical, biological or other effects, which prevents their further use, as well as expired drugs.

So, in our opinion, the definition of counterfeit medicines, which is contained in the Law of Ukraine "On Medicines", absorbs the definition of poor-quality drugs only in the part of the expiration of their expiration date. As for other types of substandard medicines, they are not formally falsified, and therefore do not fall under the definition of the subject of a criminal offense. The above gives an opportunity to conclude that it is necessary to improve the legislative definition of counterfeit medicines for the inclusion in its composition of other types of low-quality medicinal products, bringing it, therefore, to international standards.

A similar conclusion was reached by a number of other scholars. In particular, V. M. Melnychuk notes that in addition to counterfeit medicines, life and health of Ukrainian citizens are also threatened with: 1) poor-quality medicines; 2) counterfeit medicines, which should be considered imported in violation of customs rules; issued by the original manufacturer outside the working process; taken without the opinion of the State Service about their quality. In this regard, it is appropriate to extend the understanding of the subject of the crime provided for in Art. 1 of the Criminal Code of Ukraine, supplemented it with substandard and counterfeit medicines. Agreeing with the statement on the necessity of expanding the subject of crime, we consider it more expedient to change the definition contained in the Law of Ukraine "On Medicinal Products".

At the same time, the definition proposed by the WHO according to which a falsified medicinal product is a pharmaceutical product that is

intentionally and fraudulently provided with false markings regarding its authenticity, source of origin, history deserves consideration. This definition is specified by the International Institute for the Study of Falsified Drugs, which classifies counterfeit medicines in accordance with the criterion of non-compliance with those that do not correspond to the identity, source or history of the medicinal product.

Non-identical is a medicinal product that has: a) incorrect packaging; b) incorrect marking; c) incorrect composition of medicinal product (presence or absence of active substance, other auxiliary components). Inconsistency of the source of the medicinal product may be expressed in: a) the wrong manufacturer; b) the wrong country of origin; c) the wrong holder of the permit, the applicant. Incorrect history of a medicinal product includes: a) incorrect or incomplete information concerning methods of distribution of a medicinal product; b) non-compliance with lawful distribution channels.

In our view, a falsified medicinal product should be defined as a drug that has a false identity, including packaging, marking, name and composition; source of origin, including manufacturer, country of manufacture or owner of the permit for sale; or a medicinal product that has undergone a mechanical, chemical, physical, biological or other influence that prevents their further use, as well as a medicinal product with expired expiration date.

Taking into account the above, one can distinguish the following forensic meaningful signs of counterfeit medicines depending on the component that is falsified: 1) the falsified medicinal product has a changed composition, packaging, marking. 1) falsified medicinal product has a changed composition, packaging, marking. This type of counterfeit medicine usually does not contain the claimed or any active substance or includes its smaller amount. Some ingredients may be toxic, others may be inactive, which is also dangerous for a patient who needs specific medications. The danger of such a falsified product is that, along with the composition, the physical and chemical properties of the falsified medicinal product change, which may make it impossible for its intended use; 2) the falsified medicinal product has a changed source of origin, changed producer, holder of the permit, country of origin. The main danger of such drugs is that the quality of their ingredients cannot be verified due to violation of the order of circulation of such drugs; 3) falsified medicinal product, which has changed physicochemical properties. This type of counterfeit medicines is most often associated with non-fulfillment of obligations for their safe transportation and storage (for example, non-compliance with storage requirements for cold medicines). Another commonly used example is the use of a medicinal product with expired expiry date, i.e., expiration date. Therefore, even if the qualitative and quantitative components of the medicinal product are in accordance with the claimed information, the

non-compliance with the requirements for the management of medicinal products may lead to deterioration of their quality, which pose a significant risk to patients.

For the development of a methodology for investigating crimes, the problems of forensic classification of crimes are of particular importance, since they are the basis for the construction of separate forensic methods. To solve these important tasks, it is necessary to investigate the problems of forensic classification of counterfeit medicines as a subject of a criminal offense. As one of the means of knowledge, the classification can be considered simultaneously as a process and the result of a typological method, which allows dividing the plurality of objects into subsets (subclasses) according to certain features[1]. Classification is a process of streamlining certain phenomena, processes or facts in the characteristic and at the same time distinctive (specific) features. This process of scientific knowledge allows us to understand and develop general principles that explain the appearance and order of the phenomena, processes, or facts that are observed[2].

In literary sources, attempts were made to classify falsified medicines and to streamline their species data. In particular, the classification of counterfeit medicines for "white", and "black", is quite common among scholars[3]. "White falsifications", are those where: 1) qualitative and quantitative composition of the active substance corresponds to the marking, but the trademark of the manufacturer is falsified; 2) the quantitative composition is not maintained (other adjuvants may be present); 3) active and auxiliary substances do not meet the requirements of Pharmacopoeia (i.e. lower level). "Black falsifications", include those in which the qualitative or quantitative composition of the preparation does not correspond to labeling, namely: instead of the declared amount of active substance it contains less or even another substance, a cheaper substance, or no active substance at all.

In turn, A. A. Gopa[4] suggests to allocate the following types of counterfeit medicines depending on the method of manufacturing: 1) drugs —

[1] Tischenko V. V. (2002) *Kontseptualni osnovy rozsliduvannia koryslyvo-nasylnytskykh zlochyniv: avtoref. dys. ... d-ra yuryd. nauk*. [Conceptual basis for investigating mercenary-violent crimes : extended abstract of Doctoral thesis]: 12.00.09. Odessa, p. 41 [in Ukrainian].

[2] Velikanov S. V. (2002) *Klasyfikatsiia slidchykh sytuatsiia v kryminalistychnii metodytsi: avtoref. dys. ... kand. yuryd. nauk* [Classification of investigative situations in forensic methods : extended abstract of candidate thesis]. 12.00.09. Kharkiv, p. 12 [in Ukrainian].

[3] Kovalenko I. A. (2002) *Kryminalna vidpovidalnist za falsyfikatsiiu ta obih falsyfikovanykh likarskykh zasobiv: avtoref. dys. ... kand. yuryd. nauk* [Criminal liability for the falsification of medicines and the circulation of counterfeit medicines : extended abstract of Candidate thesis]. 12.00.08. Odessa, p. 47 [in Ukrainian]. Guk O. G. (2016) *Rozsliduvannia falsyfikatsii likarskykh zasobiv ta obihu falsyfikovanykh likarskykh zasobiv: avtoref. dys. ... kand. yuryd. nauk* [Investigation of falsification of medicines and circulation of counterfeit medicines : extended abstract of candidate thesis]. 12.00.09. Kyev, p. 16 [in Russian].

[4] Gopa A. A. *(*2008) *Ponjatie i klassifikacija fal'sificirovannyh lekarstvennyh sredstv. Biznes v zakone* [Concept and classification of falsified medicines. Business in the law]. № 4. P. 77–79 [in Russian].

"pustushki", — drugs that do not have the ingredients of the original registered medicinal product (for example, a pill containing nothing but neutral filler — sugar, chalk, calcium gluconate, etc. Also, ointments, gels are falsified); 2) preparations-simulators — medicines containing ingredients, which are not indicated on the package. In this way also fake ointments, gels); 3) preparations-simulators — medicines containing ingredients, which are not indicated on the package. In these falsifications, the active ingredient is replaced by a cheaper and less effective substance (for example, a labeled costly medicinal product is affixed to the bottle with a physical solution); 4) substitution drugs — medicines containing ingredients whose origin is different from that indicated on the package; such preparations may contain a substance labeled on the packaging in a greater or lesser extent than the claimed one.

For example, O. G. Guk[1], by the criterion of the presence of the active substance of a medicinal product, distinguishes the following main types of counterfeits: a preparation in which there is no active substance at all; a preparation in which all the substances are available, but it is not known under what conditions and technologies they are received; a drug in which the more expensive substance is replaced by a similar, but cheaper.

In our opinion, for the classification of the subject of a criminal offense, it is precisely his forensic features that consist in the fact that it should be a perceptive or trace-forming object of living and inanimate nature that has certain properties and characteristics that individualize it in the material world. From our point of view, it is the study of all forensic features of counterfeit medicines to establish their relationship with other elements of forensic characteristics of this crime.

Taking into account the above, we propose the classification of counterfeit medicines as the subject of a criminal offense, according to the following criteria: 1) by a method of forgery; 2) for the pharmacological group; 3) by the external form; 4) by way of packaging or label protection; 5) according to the legal regime of treatment of the medicinal product.

By way of counterfeiting, counterfeit medicines are divided into medicines falsified by changing: the composition of the medicinal product; marking; packaging; country of origin; manufacturer; permission holder; physical and chemical properties; expiration date.

By pharmacological group counterfeit medicines can be divided into antibacterial drugs; hormonal drugs; remedies that affect tissue metabolism; antifungal drugs; remedies that affect the digestive system; analgesics; other means. Typically, illicit drugs are widely used, inexpensive in value, in demand.

[1] Guk O. G. Papers mentioned above, p. 15.

By external form, such medicinal products should be divided into: a) spray-shaped medicines, such as aerosols, sprays. As a rule, they consist of a cylinder, a valve-spray system and a content of different consistency capable of being discharged from the cylinder by means of spark-ignited, compressed gases or low boiling liquids; b) soft dosage forms: gels, creams, liniments, ointments, pastes; c) liquid dosage forms: balms, water, extracts, elixirs, emulsions, concentrates, drops, lotions, medicines, tinctures, solutions, syrups, juices, mucus, suspensions, shampoos; d) solid dosage forms: granules, rubbers, drops, capsules, capsules, lollipops, lozenges, films, powders, tablets. Each dosage form has specific physico-chemical and consumer properties, characteristic auxiliaries and necessary devices and mechanisms for their use. Consequently, the availability of information about the form of a falsified medicinal product, makes it possible to formulate the idea of a specific method of falsification, equipment, excipients, necessary for such falsification and marketing of counterfeit medicines.

By way of protecting packaging or labels, counterfeit medicines can be divided into: application of a special design (special form of packaging (labels), control marks and labels, microtext, volumetric effects, special defects, hidden images); application of special material for manufacturing (coloring, watermarks, special inclusions, physical or chemical properties); application of paint (water soluble, reactive to chemical reagents, invisible fluorescent, UV and IR paints, thermochromic, magnetic); marking (barcode, hologram, radio frequency identification)[1]. The given classification has practical value, since the fact of changes in the quantitative and qualitative composition of a medicinal product cannot be detected without conducting an appropriate expert study, in turn, the falsification of packaging, labels, labeling almost always leaves the material traces of such forgery that can be detected by the naked eye.

Under the legal regime of treatment of a falsified medicinal product, it is possible to distinguish:

1) medicinal products which are in free circulation. This is an over-the-counter medication that can be sold through pharmacies without any restrictions. These things are considered to be in free circulation and can be subject to absolute and relative civil legal relations and belong to any subjects of civil law;

2) limited in circulation of medicinal products that are admitted to circulation only with a special permit. These include drugs containing narcotic drugs, psychotropic substances, precursors and potent and poisonous

[1] Gromovik B. P., Miroshnikova I. O., Ivaskevich Yu. V. (2010) *Shtrykh-koduvannia yak zasib zakhystu likarskykh preparativ i vyrobiv medychnoho pryznachennia vid falsyfikatsii. Provyzor* [Barcoding as a means of protecting medicines and medical devices from falsification : Provizor]. № 10, p. 2–7 [in Ukrainian].

drugs. These medicines are sold to the population only on prescription of the doctor;

3) withdrawn from circulation, which cannot be the subject of civil law agreements. The above features of the classification are sufficiently detailed to characterize such an element of forensic characterization as the situation of the commission of a crime, the methods of their falsification and possible ways of selling counterfeit medicines.

The proposed forensic classification covers the most significant features of this object of a criminal encroachment in the forensic sense, is universal, open, which makes it possible to supplement and improve it in accordance with the needs of practice. According to our belief, such forensic classifications should be scientifically substantiated and practically useful, therefore the most essential features of the attack should be taken as the basis for the division of the investigated objects, and the division itself (as a logical operation) should be based on rules that are dictated by formal logic. It should be taken into account that in the forensic classification in question, counterfeit medicines are required:

1) to be divided according to the types and criteria in strict accordance with the rules, which are dictated by the formal logic;

2) proceed from the essence and value of counterfeit medicines for detecting and investigating such crimes; 3) the division of falsified medicines into the proposed species is significant when the constructed classification has a pronounced forensic orientation and can be used in the practical activity of disclosing and investigating this category of crimes.

Thus, in the structure of forensic characteristics of the falsification and circulation of counterfeit medicines, the subject of a criminal offense is one of the most important elements, since it is reflected in various tracks of the work done as a trailing or perceiving object, which is very important for determining the place, time, method of commission, person the offender and other circumstances of the realization and concealment of such criminal activity. Therefore, one of the directions of improving the method of investigation of falsification and circulation of counterfeit medicines is the study and systematization of data on the subject of criminal encroachment, the identification of regular ties between them and other elements of forensic characteristics of the category of crimes under investigation.

ФАЛЬСИФІКОВАНІ ЛІКАРСЬКІ ЗАСОБИ ЯК ОБ'ЄКТ ДОСЛІДЖЕННЯ В КРИМІНАЛІСТИЦІ

І. В. Парфило

Досліджено фальсифіковані лікарські засоби як предмет злочинного посягання в структурі криміналістичної характеристики фальсифікації й обігу фальсифікованих лікарських засобів. Проаналізовано основні канали та джерела надходження на фармацевтичний ринок України фальсифікованих лікарських

засобів. Доведено, що побудова ефективної методики розслідування досліджуваної категорії злочинів передбачає проведення криміналістичного аналізу предмета злочинного посягання і його значення для побудови криміналістичної характеристики розглядуваних злочинів. Досліджено поняття та кримінально значущі ознаки фальсифікованих лікарських засобів. Запропоновано криміналістичну класифікація фальсифікованих лікарських засобів за: способом підробки; фармакологічною групою; зовнішньою формою; способом захисту упаковки чи етикетки; правовим режимом обігу лікарського засобу. Сформульовано наукові підходи та пропозиції щодо вирішення дискусійних проблем криміналістичного дослідження фальсифікованих лікарських засобів і їх значення для формування методики розслідування цієї категорії злочинів.

Ключові слова: фальсифіковані лікарські засоби, предмет злочинного посягання, обіг фальсифікованих лікарських засобів, криміналістична характеристика фальсифікації та обігу фальсифікованих лікарських засобів.

ФАЛЬСИФИЦИРОВАННЫЕ ЛЕКАРСТВЕННЫЕ СРЕДСТВА КАК ОБЪЕКТ ИССЛЕДОВАНИЯ В КРИМИНАЛИСТИКЕ

И. В. Парфило

Исследованы фальсифицированные лекарственные средства как предмет преступного посягательства в структуре криминалистической характеристики фальсификации и оборота фальсифицированных лекарственных средств. Проанализированы основные каналы и источники поступления на фармацевтический рынок Украины фальсифицированных лекарственных средств. Доказано, что построение эффективной методики расследования исследуемой категории преступлений предусматривает проведение криминалистического анализа предмета преступного посягательства и его значения для построения криминалистической характеристики этих преступлений. Исследованы понятие и криминалистически значимые признаки фальсифицированных лекарственных средств.

Обосновано, что криминалистическая особенность предмета преступного посягательства в отличие от криминально-правовой заключается в том, что это следовоспринимающий и следосоздающий объекты живой и неживой природы, их качественно-количественные показатели, физико-химические и потребительские свойства индивидуализируют предмет в материальном мире. Отмечено, что одним из направлений усовершенствования методики расследования фальсификации и оборота фальсифицированных лечебных средств является изучение и систематизация данных о предмете преступного посягательства, выявление закономерных связей между ним и другими элементами криминалистической характеристики исследуемой категории преступлений.

Предложена криминалистическая классификация фальсифицированных лекарственных средств по: способу подделки, фармакологической группе; внешней форме; способу защиты упаковки или этикетки; правовому режиму оборота лекарственного средства.

Доказано, что предмет преступного посягательства как структурный элемент криминалистической характеристики фальсификации и оборота фальсифицированных лечебных средств имеет существенное значение для выявления, раскрытия и расследования этой категории преступлений, поскольку является важным источником фактической информации, которая в процессе расследования позволяет моделировать механизм совершения преступления и дает

возможность собрать доказательства такой преступной деятельности.

Сформулированы научные подходы и предложения по решению дискуссионных проблем криминалистического исследования фальсифицированных лекарственных средств и показано их значение для формирования методики расследования этой категории преступлений.

Ключевые слова: фальсифицированные лекарственные средства, предмет преступного посягательства, оборот фальсифицированных лекарственных средств, криминалистическая характеристика фальсификации и оборота фальсифицированных лекарственных средств.

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PROBLEMS ISSUED IN THE VIEW OF THE SEAT OF THE EVENT: IDENTIFICATION AND RECOVERY OF THE CONSEQUENCES OF THE BIOLOGICAL ORIGIN

The problematic issues of identifying and removing traces of biological origin during the review of the place of the event are considered. The reasons that lead to a decrease in the quality of the traces removed are determined. Proposals for solving certain problems are formulated.

Keywords: traces of biological origin, crime scene investigation, specialist biologist, forensic scientist, quality of detected and exempt traces.

The development of new technical and tactical techniques, methods and means in general criminalistics, as well as the rapid development of a separate branch of biology — genetics, leads to an increase in the amount of biological information that can be obtained in the course of criminal proceedings. This is evidenced by the dynamics of the growth of the number of prescribed forensic molecular genetic expertise to the Kharkiv Research and Experimental Forensic Center of the Ministry of Internal Affairs of Ukraine (hereinafter: SRFC). During the last three years, the number of expert assessments increased almost doubled — from 547 to 965 (from 2015 to 2017).

But this dynamic is not an indicator of an increase in the number of positive results and those that subsequently lead to the disclosure of crimes. So, the removal of items: a) which was used by many people and on which there is no trace of information visually (for example, money); b) which are not known to have traces of biological origin (for example, shotguns and

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bullets after exposure to high temperatures during a shot); c) dimensional objects without visible traces of biological origin, removed during the inspection of the place of the event (carpeting, lining of cars, sheets, etc.)— leads to the receipt of negative results of research.

A separate issue is the quality of traces of biological origin. Biological purity of disposable and packaging materials, tools and solutions through which traces are removed, as well as the strict observance of special requirements and rules by participants in investigative actions (when working with the tracks), act as factors that significantly affect the preservation of the trace in the form, in which it was detected, and exclude the possibility of its contamination by a foreign DNA.

The process of reforming the bodies of internal affairs led to the emergence of a number of problematic issues regarding the organization of work with traces of biological origin (in conducting investigative actions) and the possibilities for their further research. In our opinion, this is due to two main reasons.

Firstly. The number of involvement of biologists from the Expert Service of the Ministry of Internal Affairs of Ukraine to participate in investigative actions has significantly decreased. This is due, first of all, to the fact that according to the Instruction on the procedure for involving employees of the bodies of pre-trial investigation of the police and the Expert Service of the Ministry of Internal Affairs of Ukraine as specialists to participate in the review of the place of the event (the order of the Ministry of Internal Affairs of Ukraine dated November 3, 2015, № 1339), a specialized mobile laboratory of SRFC may be involved in participating in a review of the place of the event in a criminal proceeding at the request of the head of the pre-trial investigation body in the event of objective circumstances connected with the commission: 1) murder or intentional serious bodily harm, which caused the death of the victim with the use of firearms; 2) robbery with the use of firearms with injured persons; 3) rape of a minor or a minor, a minor or a minor, or one that has caused especially grave consequences; 4) traffic accident, during which two or more people died or five or more persons were hospitalized to medical institutions; 5) fires during which two or more people died or five or more persons were hospitalized to medical institutions; 6) an explosion, a threat of explosion or the detection of homemade explosive devices[1].

[1]*Pro zatverdzhennia Instruktsii pro poriadok zaluchennia pratsivnykiv orhaniv dosudovoho rozsliduvannia politsii ta Ekspertnoi sluzhby Ministerstva vnutrishnikh sprav Ukrainy yak spetsialistiv dlia uchasti v provedenni ohliadu mistsia podii : nakaz MVS Ukrainy vid 03.11.2015 № 1339* [On approval of the Instruction on the procedure for involving employees of the pre-trial investigation agencies of the police and the Expert Service of the Ministry of Internal Affairs of Ukraine as specialists to participate in the review of the event: an order of the Ministry of Internal Affairs of Ukraine dated November 3, 2015, № 1339]. URL: http://zakon/rada/gov/ua/lavs/show/z1392–15.

Secondly. There is a problem of insufficient theoretical training of criminological inspectors (who are involved in the survey of the place of the event) and lack of necessary practical skills in them. Creation of units of technical and forensic provision of investigative actions in the territorial departments of the police, led to the separation of criminological inspectors from the training "base" (regional SRFC) and the decline in their professional skills.

As a rule, during the review, the investigator expects active assistance from a criminalist in the form of: the use of the necessary scientific and technical means; detection and removal of objects; fixing of the course and results of the review with the help of technical means; providing explanations to the investigator regarding the features and certain properties of objects (which are being surveyed); conducting with the help of special means of preliminary rapid research; correct description of detected objects and traces; advice on the rules of handling them, packaging and further storage; measurements; drawing up plans, drawings, etc.[1].

The solution to all these tasks lies with criminological inspectors, whose professional training requires the use of new formats, technologies and capabilities.

In general, in forensic and specialist literature, the issue of attracting specialists to inspect the place of the event is not given much attention. Such researches as I. V. Gora, V. V. Kovalyov, V. N. Makhov, I. V. Pirih, M. G. Shcherbakovsky, V. O. Yaremchuk and others have devoted their research to separate problems of attraction of specialists.

Thus, V. O. Yaremchuk notes that important traces, material evidence, circumstances relevant to the disclosure of a crime occur in cases where a specialist personally participates in the investigative action[2].

V. M. Khrustalev and R. Yu. Trubitsin, emphasize the participation of a team of specialists in the of crime scene inspection. For example, a brigade of specialists is sent to the place of grave crimes with significant social resonance, namely: specialist for working with traditional types of tracks, a specialist specializing in working with micro objects, a biologist and a specialist according to the type of crime committed[3]. However, in most of the work, as a rule, the general issues of engaging profile specialists for working

[1] Yaremchuk V. O. (2015) *Problemy zaluchennia spetsialistiv do provedennia ohliadu mistsia podii (orhanizatsiia i taktyka). Teoriia i praktyka pravoznavstva* [Problems of attracting specialists to a crime scene inspection (organization and tactics). Theory and practice of jurisprudence]. Issue 2 (8) [in Ukrainian].

[2] Yaremchuk V. O. (2017) *Zaluchennia hrupy spetsialistiv pry rozsliduvanni zlochyniv. Teoriia i praktyka pravoznavstva*. [Involvement of a group of specialists in the investigation of crimes. Theory and practice of jurisprudence]. Issue 2 (12), p. 59–64 [in Ukrainian].

[3] Khrustalev V. N. Trubitsyn R. Yu. (2003) *Uchastie specialista-kriminalista v sledstvennyh dejstvijah : ucheb. posobie* [Criminalist Participation in investigative actions : tutorial]. Saint Petersburg : Piter, p. 208 [in Russian].

with traditional tracks: footprints, shoes, tools of burglary, vehicles, etc. are considered.

Practical issues of technique and tactics of work with traces of biological origin are partly covered in the works of such scientists as L. O. Barsegyanets, M. A. Bronnikov, I. V. Lozynskyi, T. F. Moiseyev, I. O. Perepechenyna, V. I. Starovoitova, T. V. Stegnova, V. V. Tomilin, A. K. Tumanov. But these researches should be referred to as special literature, which often impedes the free access to them, and the substantial load of such literature does not always contribute to a clear assimilation of the material by investigators and Criminalistics inspectors.

In textbooks on Criminalistics and high education programs, there are no cycles in the training of specialists on the traces of biological origin at all. Their material is often presented with information on the general concept of traces (trace information), their classification and the nature of their formation (trace evidence), and if they mention the biological nature of their origin, then only on the example of traces of blood or smell traces.

Consequently, the article purpose is to consider problematic issues that arise when working with traces of biological origin during the conduct of investigative actions, as well as to find and propose ways to solve them.

Work with traces of biological origin due to their specificity (lack of stable structure, rapid change of appearance under the influence of physical factors, etc.) requires special knowledge, means and methods for their search, detection, fixation and removal. Thus, the traces of the allocation of the human body are not always visible, may be insignificant as a result of a small number or acts of the perpetrator of their destruction[1]. In addition to the actual detection of traces, such features as the form, color, physical condition, localization on objects, and the mechanism of their formation may also carry significant information, which is not always fully recorded during the review of the place of the event[2].

In rare cases, when insufficiently trained criminological inspectors, many traces are removed from one person. The reason is the lack of awareness among the employee of the task of proving and the significance of further expert studies of biological traces. For example, when traces of blood are detected, many objects (trace carriers) that are mostly injured are removed, and not given proper attention to other traces.

[1] Tomilin V. V. Barsegyants L O. Gladkih A. S. (1989) *Sudebno-medicinskoe issledovanie veshhestvennyh dokazatel'stv.* [Forensic medical examination of material evidence]. Moscow : Medicine, p. 304 [in Russian].

[2] Lazebnyi A. M. (2014) *Zaluchennia spetsialista dlia provedennia okremykh slidchykh dii/Nauk. visnyk Nats. un-tu DPS Ukrainy* [Involvement of a specialist for conducting separate investigative actions / Science. Bulletin of the National Unitary SBGS of Ukraine], p. 187–193 [in Ukrainian].

Based on the practical experience of Kharkiv SRFC employees, criminological inspectors do not have exhausted practical skills in the search and identification of various types of traces of biological origin (blood, semen, saliva, hair, smell traces), the use of certain means and methods of detecting traces, the use of the necessary tools and means of its disinfection. Although the listed factors can provide a qualitative removal of biological material and reduce the risk of contamination (contamination of biological material from a foreign DNA).

In the course of seminars, workshops and joint exercises of the employees of the pre-trial investigation of the National Police and the experts of the Expert Service, we identified some of the most common issues that arise during the review of the site (in cases where biologists are not involved). Typically, these issues relate to: the quality of the review; measures to prevent the loss of meaningful information (characteristics of biological traces); actions aimed at preserving the traces removed and ensuring their suitability for further research.

Frequently there are issues of detecting traces of blood at the place of the crime. At the present stage, it is expedient to use diagnostic express tests "Hemofan", for the search and detection of such traces. When contacting the probable trace of blood and the zone of indication on a test strip, pre-moistened with water, the color of the indicator zone in the green color of different shades — from light to dark green is observed[1]. But a positive reaction indicates only the possible presence of blood in the subject under investigation and needs further research in the laboratory[2].

Seratec HemDirect special express tests are also developed and widely used in leading laboratories in Europe and the USA for the rapid detection of human blood traces. The test is based on the immunochemical response of human hemoglobin, characterized by high sensitivity and specificity. Due to the high specificity of the test, with a positive result, it can be highly likely to assume the origin of blood from a person. And due to the stability of hemoglobin, the test is successfully used in the detection of obsolete traces of blood. Positive results were observed with samples 31 years ago[3].

These tests do not require additional materials that are fast to carry out, so they are easy to use when reviewing the location of the event. But these tests are not recommended for detection of micronutrients.

[1] SERATEC ® HemDirect. *Instrukcija po primeneniju* [Instructions for use/Germany/Rev]. 02.2016.

[2] *Ohliad mistsia podii: vyiavlennia ta vyluchennia ob'iektiv biolohichnoho pokhodzhennia: metod. rekomend. / S. I. Perlin, S. O. Shevtsov, N. M. Kosmina, V. V. Ionova* (2009) [Event Overview: Identification and Removal of Objects of Biological Origin : Methodical recommendations / S. I. Pearlin, S. O. Shevtsov, N. N. Kosmina, V. V. Ionova]. Kharkiv, p. 100 [in Russian].

[3] SERATEC ® HemDirect. *Instrukcija po primeneniju* [Instructions for use/Germany/Germany/Rev]. 02.2016.

In connection with the emergence of molecular genetic studies, in which the so-called "control washouts", and "control of the object-carrier", are not used, there arises the question of the expediency of their removal during the inspection of the place of the event. Yes, in the special literature it is recommended:

— small objects with traces are removed as a whole and packed in a dried state. In exceptional cases where, for example, weather conditions make it impossible to do this, the item is packed in paper or cardboard packaging, with the mandatory indication of this fact on the packaging and in the protocol of the investigative action[1].

— from carriers that cannot be removed as a whole, or if objects have artistic value, spots are carefully scraped off or washed off with distilled water. For this purpose, fragments of gauze napkins are used in sizes appropriate to the size of the spot. For further conducting of immunological examination, it is necessary to remove and separate the packaging of the control flush from the carrier object (the flush from the area free of stratification and in immediate proximity to it) and control of pure gauze, similar to the one by which the washer was made.

For further molecular-genetic research, these controls are not required, but because the decision on the type of further study of objects is not always taken by the investigator directly during the inspection of the site, it is recommended to remove and separately pack the control washings and gauze control;

— clothes with traces of biological origin of the suspect or the victim are packed in separate packages, wrapped in trays in the middle and translated with sheets of clean white paper, to avoid touching and transferring traces of different origins;

— microobjects that look like hair, are removed without the use of metal tools with hands in rubber gloves and placed in a paper envelope or roll. If the hair is detected in the traces of dried blood, it is removed with the blood or with parts of the carrier material. It is unacceptable to fix micro-objects that look like hair on an insulating tape and tape of the type "tape", due to the fact that the adhesive layer does not allow to separate the microscope without damaging[2].

It is also not recommended to use fingerprint films to remove hair, due to the fact that they have an adhesive layer of considerable thickness and the hair is immersed in it, which makes it difficult to remove it and to further clean it from the sticky substance.

[1] *Ohliad mistsia podii: vyiavlennia ta vyluchennia ob'iektiv biolohichnoho pokhodzhennia: metod. rekomend* [Event Overview: Identification and Removal of Objects of Biological Origin: Methodical recommendations] [in Ukrainian].

[2] Ibidem.

Based on the analysis of problem issues, in order to improve the quality of the removal of traces of biological origin during the review of the site, in our opinion, it is necessary to take into account in the work of the investigation units and units of the criminological inspectors, which are members of the Main Departments of the National Police in the oblasts, the following:

— involve biologists of regional SRFC in reviewing the place of the event on the facts of committing grave crimes;

— solve the problem of insufficient theoretical training of criminological inspectors and lack of necessary practical skills in them by organizing systematic studies with the invitation of biologists of regional SRFC;

— resolve for the investigation units and criminological inspectors the issue of the elimination of informational "famine", in the direction of "search — seizure — packing of traces of biological origin", by providing the necessary literature (manuals, reference books, scientific and methodological recommendations, information letters, etc.).

The proposed comprehensive approach to improving the organization of professional training of investigating units and units of criminological inspectors, in our opinion, will contribute to improving the quality of detection and removal of trace information of a biological nature, which will definitely contribute to obtaining positive results at the stage of pre-trial investigation of criminal offenses.

ПРОБЛЕМНІ ПИТАННЯ, ЩО ВИНИКАЮТЬ У ХОДІ ОГЛЯДУ МІСЦЯ ПОДІЇ: ВИЯВЛЕННЯ Й ВИЛУЧЕННЯ СЛІДІВ БІОЛОГІЧНОГО ПОХОДЖЕННЯ

О. В. Матарикіна

Розглянуто проблемні питання виявлення та вилучення слідів біологічного походження в ході проведення огляду місця події. Визначено причини, що призводять до зниження якості вилучених слідів. Сформульовано пропозиції щодо усунення визначених проблем.

Ключові слова: сліди біологічного походження, огляд місця події, спеціаліст-біолог, інспектор-криміналіст, якість виявлених і вилучених слідів.

ПРОБЛЕМНЫЕ ВОПРОСЫ, ВОЗНИКАЮЩИЕ В ХОДЕ ОСМОТРА МЕСТА ПРОИСШЕСТВИЯ: ВЫЯВЛЕНИЕ И ИЗЪЯТИЕ СЛЕДОВ БИОЛОГИЧЕСКОГО ПРОИСХОЖДЕНИЯ

Е. В. Матарыкина

Разработка новых технических и тактических приемов, методов и средств в общей криминалистике, а также стремительное развитие генетики приводят к росту количества информации биологического характера, которую можно получить в ходе проведения осмотра места происшествия. Увеличение количества назначенных экспертиз не всегда приводит к получению положительных результатов. Это зависит от полноты и качества изъятых следов. Уменьшение количества привлечений специалистов-биологов Экспертной службы МВД Украины

к участию в следственных действиях, недостаточная теоретическая и практическая подготовка инспекторов-криминалистов, которые привлекаются к проведению осмотра места происшествия — это факторы, которые влияют на полноту и качество изъятой биологической информации. Работа со следами биологического происхождения из-за их специфичности нуждается в специальных знаниях. Недостаточность доступной методической литературы по технике и тактике работы со следами биологического происхождения, отсутствие в учебниках по криминалистике и в программах подготовки высших учебных заведений информации, касающейся поиска, выявления и правил изъятия таких следов, приводит к возникновению ряды вопросов относительно качества проведения осмотра, мероприятий по предотвращению потери значащей информации, действий, направленных на сохранение изъятых следов и обеспечение их пригодности для дальнейшего исследования. Проанализировав основные проблемные вопросы, которые возникают при работе с биологическими следами в ходе осмотра места происшествия, предложены следующие пути их решения: привлекать специалистов-биологов региональных центров к осмотру места происшествия за фактами совершения тяжких преступлений; решить проблему недостаточной теоретической подготовки инспекторов-криминалистов и отсутствия у них необходимых практических навыков путем организации систематических занятий с приглашением специалистов-биологов региональных центров; обеспечить необходимой литературой подразделения следствия и инспекторов-криминалистов по направлению «поиск — изъятие — упаковка следов биологического происхождения»; внести в программы подготовки следователей и инспекторов-криминалистов высших учебных заведений циклы по работе с по следам биологического происхождения.

Ключевые слова: следы биологического происхождения, осмотр места происшествия, специалист-биолог, инспектор-криминалист, качество выявленных и изъятых следов.

GENERAL PROVISIONS OF FORENSIC SCIENCE

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ABOUT INTERNATIONAL COOPERATION IN THE FIELD OF FORENSIC SCIENCE

Main development tendencies of international cooperation in the field of forensic science and positive experience for use in the practice of forensic science institutions of Ukraine are noted. It is concluded that the introduction of international standards in the work of forensic science institutions of Ukraine is an urgent issue and the key to the conclusion recognition of Ukrainian forensic at the international level.

Keywords: international cooperation, forensic examination, forensic expert activity, international standards.

International cooperation in the area of forensic science is a system that is sufficiently developed and experiencing influences of a variety of factors. Strengthening such cooperation in any country is always in the interests of forensic scientists, and forensic science institutions (hereinafter — FSI), judicial system, law enforcement agencies, a single citizen and civil society as a whole. Main reasons that today cause the need to intensify international cooperation of forensic experts include the processes of globalization of all spheres of human activity, the rapid development of communication tools, international scientific relations, accelerating the migration of the population and the intensification of international transnational organized crime associated with these processes, and international terrorism. The United Nations Commission on Crime Prevention and Criminal Justice, in its resolution *International cooperation in the field of forensic expertise*, noted that the role of forensic examination is constantly increasing in the fight against crime, terrorism and the protection of human rights[1]. In addition, it should be noted

[1] International cooperation in the Forensic Field. Resolution 19/5 of the Commission on Crime Prevention and Criminal Justice UNODC. UN Document E/CN.15/2010/L.13/Rev.1. URL :

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that the analysis of the current state of forensic examination and other forms of use of specialized knowledge will be far from complete without a systematic study of the organization and practice of forensic examination in other countries. Other factors emphasized by the rapid development of scientific and technological progress are highlighted, indicating that the problems of forensic examination in the field of international cooperation in combating crime and human rights protection are relevant and require additional research.

Leading Ukrainian scientists, including O. M. Bandurka, A. F Volobuev, Yu. M. Groshevyy, V. A. Zhuravel, V. V. Lysenko, M. Ya. Sega, R. L. Stepanyuk, Yu. S. Shemchushenko, V. Yu. Shepitko and others made a significant contribution to the study of issues related to international cooperation in the field of forensic science activity (hereinafter: FSA). However, despite the significant contribution of scientists to developing the problems of international cooperation in the field of FSA, they remain relevant and require the development of new and new developments.

The purpose of the article is to study the main tendencies of the development of international cooperation in the field of FSA and to identify the positive experience for use in the practice of the forensic science institutions of Ukraine.

In order to identify the general trends in the development of international cooperation in the field of the FSA, it is necessary to pay attention to a number of interconnected factors, among which:

— legal relations that arise in connection with the conduct of forensic examination and the organization of FSA and are regulated by various branches of domestic, foreign and international law;

— organization of international cooperation in the FSI and the peculiarities of the interaction of these institutions with participants in legal proceedings abroad and in international judicial bodies;

— structure and activity of international associations of forensic experts;

— organization of forensic examinations and expert studies by international teams of forensic experts;

— international scientific and methodological cooperation in the field of forensic examination, as well as in the field of training and advanced training of forensic experts[1].

www.unodc.org/documents/commissions/CCPCJ/Crime_Resolutions/2010–2019/2010/CCPCJ/-Resolution_19–5.pdf.

[1] Khazyev Sh. N. (2007) *Osobennosti organizacii sudebnyh jekspertiz v stranah anglo-amerikanskogo prava. Teorija i praktika sudebnoj jeksperti* [Features of organization of forensic examinations in the countries of Anglo-American law. Theory and Practice of Forensic Science]. № 4(8). P. 218–220 [in Russian].

International cooperation in the field of FSA is impossible without international legal assistance in court proceedings, which is implemented taking into account the norms and principles of international law. We will consider these norms and principles in the aspect of their observance in the FSA and in the process of international cooperation in the field of forensic examination. These principles are universal, enshrined in the Charter of the United Nations and the Declaration on Principles of International Law.

The principle of the obligation of States to cooperate with each other for cooperation in solving international economic, social, cultural and humanitarian issues, as well as the maintenance of international peace and security by taking effective collective action[1]. In accordance with the implementation of this principle, one of the main forms of international cooperation of States in the field of forensic examination — the conclusion of cooperation agreements — has developed. Over the years of independence, Ukraine has concluded a number of international agreements on cooperation in the field of environmental protection with European countries and countries of the Near and Middle East (Estonia, Georgia, Kazakhstan, Latvia, Lithuania, Moldova, Uzbekistan, Vietnam, China, Macedonia, Mongolia, Poland, The Czech Republic, etc.). These treaties establish the procedure for calling experts abroad, guarantees of protection of experts, the right to reimbursement to the expert travel and stay costs, the right to pay for work performed, etc.[2]. The contracts also provide for joint scientific work on the main problems of forensic examination, improvement of existing ones, creation of new methods and methods of forensic examination, exchange of experience of expert practice.

Cooperation also identifies the following areas of activity:

— exchange of information on research and development, new educational, methodological and reference publications;

— conducting scientific conferences, exhibitions in the field of criminalistics and forensic examination;

— coordination of scientific work on the issues of forensic examination in the form of joint development of methods and methods of forensic examination, implementation of scientific developments at the request of one of the parties;

— training and advanced training of personnel;

— mutual certification of scientific developments, expert conclusions;

[1] *Statut Orhanizatsii Ob'iednanykh Natsii* [Charter of the United Nations] URL: www.un.org/ru/documents/charter/-chapterl.shtml [in Ukrainian].

[2] *Ekspertyzy u sudovii praktytsi: nauk.-prakt. posib./za zah. red. V. H. Honcharenka* (2010) [Forensic examinations while legal proceedings: Scientific practical textbook edited by V. H. Honcharenko]. Kyiv : Yurinkom Inter, p. 54 [in Ukrainian].

— providing scientific, methodological, advisory, technical assistance on scientific and expert activities[1].

The principle of sovereign equality of states is realized due to respect for the peculiarities of the historical, social, political and cultural development of each individual country and is traced in the ability of the state to independently determine the norms of procedural legislation on conducting forensic examinations and FSA. At the same time, the principle of respect for the principle of respect for human rights and fundamental freedoms remains a key factor. Each state reserves the right to determine the conditions and procedure for conducting forensic examinations in its territory by foreign court experts (Article 23 of the Law of Ukraine *On Judicial Examination*[2].

The principle of faithful fulfillment of obligations under international law is implemented in the domestic procedural law governing the appointment and conduct of forensic examinations and in the practice of providing international legal assistance in criminal and civil cases, provided for in Art. 22 of the Law of Ukraine *On Judicial Examination* — in case of conducting forensic examination on behalf of the appropriate body or person of another state with which Ukraine has an agreement on mutual legal assistance and cooperation, the legislation of Ukraine applies, unless otherwise provided by the said agreement[3].

The principle of respect for human rights and universal freedoms must be a key not only in the legislation on FSA, but also in the practice of forensic examinations. International community has developed, as a matter of principle, such requirements for conducting forensic examinations as:

— independence of forensic experts;

— reasonable limits to the restriction of human rights in conducting forensic and forensic psychiatric examinations;

— equality of parties in court proceedings when deciding on the choice of an expert or expert institution, definition of questions for an expert, etc.

These requirements are reflected in the legislation of Ukraine.

Analyzing the main trends in the development of international cooperation in the field of FSA, it should be noted that all existing to date, its forms can be grouped into three large groups, namely:

— those established by international governmental organizations or governed by international law, international treaties and national procedural law;

[1] *Ekspertyzy v Ukraini/V. H. Honcharenko, E. F. Demskyi, O. M. Dzhuzha ta in. Biuleten zakonodavstva i yurydychnoi praktyky Ukrainy* (2010) [Forensic examinations in Ukraine / V. H. Honcharenko, E. F. Demskyi, O. M. Dzhuzha and others. Bulletin of Legislation and Legal Practice of Ukraine]. 2002. № 6. Kyiv : Yurinkom Inter, p. 4 [in Ukrainian].

[2] *Pro sudovu ekspertyzu : Zakon Ukrainy vid 25.02.1994 № 4038-KhII (zi zminamy ta dopovnenniamy). Vidom. Verkhov. Rady Ukrainy* (1994) [On Judicial Examination: The Law of Ukraine from 25.02.1994 № 4038–XII (with changes and annexes). Bulletin of Verkhovna Rada of Ukraine] № 28. Art: 232 [in Ukrainian].

[3] Ibidem.

— cooperation of experts and FSI in conducting forensic examinations carried out on the basis of mutual exchange;

— cooperation, carried out in the field of scientific, methodological and technical support of the FSA[1].

Analysis results of the state and dynamics of international cooperation in the field of FSA show that today the following groups of main trends in the fields of:

— organization of international forensic expert cooperation by ways of strengthening regional cooperation, creation of international forensic expert teams, improvement of means and methods of communication between FSI, creation of united databases and data banks;

— scientific provision of the FSA through the intensification of the exchange of scientific achievements in the field of forensic expertise, the unification of the efforts of the international forensic expert community in the development of urgent issues of the FSA, increased interest in the general theory of forensic examination, development of human rights observance in the course of forensic examination;

— methodological support of the FSA in following directions: — methodological support of the FSA in the directions: unification of forensic expert methods, introduction of international accreditation of expert laboratories and professional testing of forensic experts, unification of requirements for experts in the field of professional ethics, activation of sample exchange for comparative studies, etc.;

— technical support of the FSA, taking into account the growth of production of technical means of forensic examination, the development of uniform requirements for digital photo and video images used in forensic examination, and the rapid development of research in the field of judicial computer-technical expertise.

Recently, forensic examination in Ukraine, as well as the FSA as a whole, has changed. Looking through the prism of new international standards and innovative technologies conducting of examinations, it is advisable to introduce new forms of cooperation between Ukrainian and international expert institutions. International relations are regulated by the Law of Ukraine *On Judicial Examination*. This law establishes the right of forensic institutions to establish international cooperation on the methodology for conducting forensic examinations and scientific developments jointly by Ukrainian and European expert institutions. The current legislation in the field of forensic expertise provides for various forms of information exchange in the field of the theory and practice of forensic examination and criminalistics,

[1] Matvieievskyi O. V. (2013) *Mizhnarodno-pravove zabezpechennia sudovykh ekspertyz: postanovka pytannia. Mytna sprava* [International legal support for forensic examinations: statement of the question. Customs business]. № 6(90). P. 56 [in Ukrainian].

including the exchange of trainees, holding of joint scientific conferences, the exchange of publications, the implementation of joint publications, etc.[1].

Contemporary globalization and the integration of international norms into national legislation open up new challenges and priorities to the inclusion of international standards in the FSA. The study of foreign practice of regulating the FSA offers new opportunities for improving the quality and professionalism of forensic examinations. Successful accession to the European community of experts and the development of international cooperation depends on domestic democratic development, the achievement of a new quality of society and the irreversibility of democratic transformations in all areas of social life[2].

European practice, based on the legal standards, indicates that there are mandatory standards and standards that are of a recommendatory nature[3]. Mandatory standards are based on legal standards that require proper conduct. This peculiarity of standards largely acknowledges the general direction of the development of the legal system, since in its legal nature these norms belong to the norm-principles and have a constitutive character. Optional standards are of a recommendatory nature and are the product of international law of the 20th century, when the "speed", of their development did not coincide with the capabilities and desires of individual states. The division of European legal standards into distinct varieties resulted in the functioning of the law in the usual sense of binding character, and "soft", law[4].

International standards exist in all areas of legal regulation; however, they are mostly identified with the standards that govern the technical field. Today it is difficult to imagine the sphere of public life, in which there would be no universally accepted international standards. European legal standards are formed within the two largest regional international associations: The Council of Europe and the European Union (EU). The Council of Europe first of all establishes standards in the humanitarian sphere: protection of human rights, environmental protection, constitutional law, which is determined by the purposes and purpose of its functioning. The European Union, through directives, regulations and other legal acts, sets standards for most of the EU human life spheres.

It should be noted that it is in the process of developing "standardization", in European law that a kind of development of public

[1] Matvieievskyi O. V. Papers mentioned above, p. 56.

[2] Filonenko R. Yu. (2011) *Demokratyzatsiia ukrainskoho suspilstva — zasadnycha skladova vkhodzhennia Ukrainy do prostoru Yevropy. Viche.* [Democratization of Ukrainian society is a fundamental component of Ukraine's accession to the European space. Viche]. № 2 (January). P. 12 [in Ukrainian].

[3] Khaustova M. H. (2017) *Mizhnarodni standarty v konteksti yevrointehratsiinykh protsesiv v Ukraini. Visnyk nats. akad. pravov. nauk Ukrainy* [International Standards in the Context of European Integration Processes in Ukraine. Bulletin of National Academy of Legal Sciences of Ukraine] № 2(89). P. 44–45 [in Ukrainian].

[4] Ibidem, p. 44.

relations in the EC takes place. In defining the European legal standard as a separate category of European law, it should be noted that this term coexists broadly as a "legal standard", and includes elements such as the general principles of EU law and the "common values", of the EU — they relate to people, the environment, economic issues, etc.[1].

A classic example of their consolidation is the Convention for the Protection of Human Rights and Fundamental Freedoms of 1950. In the narrow sense, this term has a specific content and does not coincide with the notion of "legal standard". These technical standards adopted by the European Committee for Standardization are, by their content, a technical publication that is used as a norm, rule, guidance or definition. Such standards refer to products, services or systems and are the basis for convergence and interaction within the growing market of various industries. Today in international law, a system of standards regulating various aspects of international relations is working. With this in view, implementation of international standards in Ukrainian legislation will give an opportunity to reach a different level of development of social relations, in particular in a field such as the FSA.

It should be noted that the concluded cooperation agreements contribute to the standardization of the FSA in Ukraine and have a positive effect on the exchange of information in the field of expert work, research works, and the implementation of measures for the mutual exchange of information on the organization of the work of expert institutions. It should also be emphasized that international cooperation is carried out not only at the level of legislative activity, but also at inter-departmental level (Ministry of Justice, Ministry of Internal Affairs, etc.).

Currently increasing demand for recognition of research results at the international level is gaining in importance. So, for the international recognition of the measurement results, the activity of any laboratory should meet the requirements of international standards. In accordance with these requirements, all EU forensic laboratories should be accredited according to the international standard ISO 17025 (ISO 9001) and further strictly adhere to it. This effectively implement the elements of cooperation in carrying out complex, multiple examinations, to increase the dynamics of methodological support through differentiation of research results, organize wide exchange of information (including information and reference sample arrays) on a single methodological basis and so on. Thus, the analysis of European practice in

[1] Khaustova M. H. Papers mentioned above, p. 45.

the organization of FSA has shown that compliance with such standards is one of the main requirements of the FSI that are part of the ENFSI[1].

Current international cooperation Ukrainian expert institutions in the field of FSA is to join the European network of forensic institutions — the European Network of Forensic Science Institutes (ENFSI) that is one of the biggest international forensic expert organizations. Its official history began in 1995, when the appropriate organizational measures were implemented in the Netherlands. In 1999, the ENFSI Charter was adopted at the conference; it's the most important document governing its activities. The statute defines the purpose of ENFSI activities regarding its creation, functioning, structure and principles of development[2]. This document provides for refraining from interfering in the national laws on judicial expertise of members of organizations from different countries, since the purpose of this organization is to achieve high quality judicial expertise in European countries.

As a part of ENFSI three permanent structures function: The Committee of Experts' Working Groups (Expert Working Group Committee, EWGC), the Committee on Quality and Qualifications (Quality & Competence Committee, QCC) and the European Academy of Forensic Science (European Academy of Forensic Science, EAFS). As it can be seen from the statutory documents of this organization, the ENFSI strategic plan includes the vision of the future of ENFSI, its general and key objectives, and concrete actions aimed at achieving the reverse objectives. As a vision of the main direction of its activities, ENFSI has identified the improvement of the quality of European forensic science. As defined goals ENFSI further strengthening relations between the members themselves and with ENFSI, increased activity members, establishing relationships with other organizations and laboratories ENFSI expansion by attracting new members, the creation and adherence to international quality standards of forensic examination[3].

The priority task of ENFSI is to create effective and professional forensic expertise. ENFSI activities combine production, scientific and methodological capabilities of forensic expert institutions; expansion of the membership of this organization strengthens the trust of law enforcement agencies and courts; organizationally established and fully supported business relations with other similar organizations, whose activities are related to criminology and forensic examination; the activities of all ENFSI member institutions are strongly encouraged to actively introduce into the expert

[1] Khocha V. V. (2010) *Problemni pytannia akredytatsii ekspertnykh ustanov v Min'iusti Ukrainy v aspekti vstupu do Yevropeiskoho Spivtovarystva. Biuleten Ministerstva yustytsii Ukrainy* [Problems of accreditation of expert institutions in the Ministry of Justice of Ukraine in the aspect of joining the European Community. Bulletin of the Ministry of Justice of Ukraine]. № 4–5(102–103). P. 166 [in Ukrainian].

[2] Ibidem.

[3] Matvieievskyi O. V. Papers mentioned above, p. 56.

practice of modern research methods, international standards, which ensures the high expertise of experts in specific types of work and examinations[1]. ENFSI brings together 56 forensic and forensic institutions of 32 countries geographically located throughout Europe. Many of them belong to the EU or are candidates for accession to the community.

The dynamics of the development of the FSA in Ukraine and of all the integration processes associated with it allow us to speak about the entry of our forensic expert system into the European one. Currently only two expert institutions of the Ministry of Justice of Ukraine (Hon. Prof. M. S. Bokarius Kharkiv Research Institute of Forensic Examinations and the Kyiv Scientific Research Institute of Forensic Expertise) are members of the ENFSI while the unification and specificity of the Ukrainian forensic institutions remains.

Summarizing the above, it can be said that the introduction of international standards into the activities of the Ukrainian State Enterprise of Ukraine is an urgent issue and the key to the recognition of the findings of the court experts of Ukraine at the international level. The existing network of the FSI of Ukraine needs, firstly, separate financing for updating the material and technical base, accreditation and standardization of equipment for conducting expert assessments; and secondly, highly skilled experts for work in institutions. Over the years of independence, Ukraine has borrowed the basic principles of work of forensic experts and independently developed the empirical and scientific methods of work of expert institutions, which was noticed by European experts, namely: representatives of ENFSI.

ДО ПИТАННЯ МІЖНАРОДНОГО СПІВРОБІТНИЦТВА В ГАЛУЗІ СУДОВОЇ ЕКСПЕРТИЗИ

О. М. Клюєв

Зазначено основні тенденції розвитку міжнародного співробітництва у сфері судово-експертної діяльності та позитивний досвід для використання в практиці діяльності судово-експертних установ України. Зроблено висновок, що впровадження міжнародних стандартів у діяльність судово-експертних установ України є нагальним питанням і запорукою визнання висновків судових експертів України на міжнародному рівні.

Ключові слова: міжнародне співробітництво, судова експертиза, судово-експертна діяльність, міжнародні стандарти.

К ВОПРОСУ МЕЖДУНАРОДНОГО СОТРУДНИЧЕСТВА В СФЕРЕ СУДЕБНОЙ ЭКСПЕРТИЗЫ

А. Н. Клюев

Указаны основные тенденции развития международного сотрудничества в сфере судебно-экспертной деятельности и положительный опыт для использования в практике деятельности судебно-экспертных учреждений Украины. Также рассмотрены основные принципы международного сотрудничества, которые

[1] Khocha V. V. Papers mentioned above, p. 166.

являются универсальными и закрепленными в Уставе Организации Объединенных Наций и в Декларации о принципах международного права, а именно: принцип необходимости взаимного сотрудничества государств, принцип суверенного равенства государств; принцип добросовестного выполнения обязательств согласно требованиям международного права; принцип уважения к правам человека и его общих свобод. Основное внимание уделено тому, что результаты анализа состояния и динамики международного сотрудничества в сфере судебной экспертизы свидетельствуют о том, что сегодня уже сформированы основные тенденции в разных сферах, а именно в: организации международной судебно-экспертной кооперации; научной, методической и технический поддержке судебно-экспертной деятельности и дана им характеристика. Особенно подчеркивается тот факт, что сегодня приобретает актуальность требование относительно признания результатов исследований на международном уровне. Итак, для международного признания результатов измерительной деятельности любая лаборатория должна отвечать требованиям международных стандартов. Согласно требованиям сети экспертных учреждений все судебно-экспертные лаборатории Европейского Сообщества должны быть аккредитованы согласно международному стандарту МСО 17025 (МСО 9001). Дальнейшее строгое соблюдение этого положения позволит эффективно реализовывать элементы сотрудничества в выполнении комплексных многообъектних экспертиз, повышении динамики развития методической поддержки путем дифференциации научных исследований, организации широкого обмена информацией (в том числе информационно-справочных массивов образцов) на единой методологической основе. Сделан вывод, что внедрение международных стандартов в работу судебно-экспертных учреждений Украины является актуальным вопросом и гарантией признания заключений судебных экспертов Украины на международном уровне.

Ключевые слова: международное сотрудничество, судебная экспертиза, судебно-экспертная деятельность, международные стандарты.

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ORGANIZATION OF FORENSIC LABORATORIES IN EUROPE WITH A WELDING TO WESTERN BALKAN COUNTRIES — PRACTICAL ASPECT

This paper gives an overview of the organizational positioning of forensic laboratories in the countries of Europe with a particular emphasis on the countries of the Western Balkans. This is because the region of the Western Balkans is relatively small in size and has a large number of countries, almost in all of which forensic laboratories are organized. As you can see from the paper, most forensic laboratories are organized in the interior ministries, that is in the police. Since this way of organizing the fulfilment of tasks on proving evidence in solving crimes causes procedural harassment, the very conclusion of the work is

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to give a proposal for their permission, which refers to the accreditation of forensic laboratories.

Keywords: forensic laboratory, police, accreditation.

Introduction. For the purpose of more efficient conduct of criminal investigations, it has long been a widely accepted approach that they must be based on scientific grounds. The application of methods of fundamental, natural sciences in the fight against crime contributes to greater effectiveness, objectivity and humanity of the fact-finding process, when dealing with criminal offenses. At the beginning of the twentieth century, after the formation of virtually the first forensic laboratories in the world, the main burden of investigation (investigatory actions and investigations) is carried out within the interior ministries[1]. This required that within the interior ministries, that is within the police, organizational units should be formed to deal with the forensic investigation (expertize) of material traces from the scene of the criminal offense.

Organization of Forensic Affairs in the countries of Europe. Forensic jobs in the countries of Europe are performed in state institutions that are most often organized organically in the police (Ministry of Internal Affairs) and/or in the Ministry of Justice, and are rarely independent state institutions. In some European countries (usually large-populated countries), forensic institutions exist in both the police (the interior ministry) and the justice ministry. Table 1 gives an overview of the organizational positioning of forensic institutions in the European countries.

[1] The first Institute of Scientific Police was formed in Lausanne in 1909. After Lausanne, the criminal-technical institutions were formed in Graz (in 1912, the Institute founded by Hans Gross, a well-known criminalist of that time, and the author of the first book in the field of criminal technique, the Handbook for Investigative Judges), then in Vienna (in 1923, the Institute of Criminal Law and Criminology, and two years later, the Institute of Criminalistic Examination). In Germany, after the Prussian War, the Prussian Police Institute was formed, which had an educational and research function, among other things in the field of criminal-technical science. In the Federal Republic of Germany (at that time the term West Germany was used) in 1951 the Federal Criminal Investigation Institute in Wiesbaden (Province of Hessen) was established. This institute, which is organized organically in the Federal Criminal Police of Germany, is valid for the personnel and materially-equipped institution of its kind in Europe. In the former USSR, in 1919, the first office of the Court Expertise was established, not long after 1922, the Scientific and Technical Department was formed at the NKVD. After the Second World War in Moscow in 1946, the Federal Research Institute was established. This institute was staffed and technically equipped for the most complex criminal-technical research, testing and analysis. In the United States, the first police laboratory was founded in 1923 in Los Angeles. Thereafter, similar criminal-technical institutions are established in all US states, and a central laboratory is established at the FBI in 1932. However, in addition to the aforementioned laboratories, which have been organized organically within the police, there are other institutions (state) in the US that deal with expertise. A good example of this is the Bureau for Alcohol, Tobacco and Firearms and the Post Office Laboratory. Regarding the states created by the breakup of the SFR Yugoslavia, in 1904, the Unit for the Identification of Accused Persons for Crimes was defatted, and in 1929, the Criminalistic Institute was established at the University of Belgrade. After the end of the Second World War, the 50s and 60s of the 20th century, Centers for Criminal Technique were established with all the Republic Ministries of Internal Affairs of the former SFR Yugoslavia. (Source — A. B. Ivanović, A. R. Ivanović (2018) Forensics for lawyers).

Table 1

Presentation of the positioning organization of forensic institutions in the European countries

The countries of Europe where forensic institutions are part of the Ministry of Internal Affairs (Police)	The countries of Europe where forensic institutions are part of the Ministry of Justice	The countries of Europe where forensic institutions are part of other state organizations
1. Albania 2. Austria 3. Bosnia and Herzegovina 4. Bulgaria 5. Montenegro 6. Denmark 7. Finland 8. France 9. Greece 10. Georgia 11. Croatia 12. Italy 13. Cyprus 14. Latvia 15. Lithuania 16. Hungary 17. Macedonia 18. Moldova 19. Germany 20. Norway 21. Poland 22. The Czech Republic 23. Romania 24. Russian Federation 25. Slovakia 26. Slovenia 27. Spain 28. Serbia 29. Sweden (by 2014, the Swedish National Forensic center was part of the Ministry of Justice) 30. Switzerland 31. Turkey 32. Ukraine	1. Azerbaijan 2. Estonia 3. The Netherlands 4. Ireland 5. Lithuania 6. Russian Federation 7. Ukraine	1. Armenia (independent national bureau as part of the Government of Armenia) 2. Belgium (independent national institute as part of the Government of Belgium) 3. Belarus (Independent State Institution) 4. Georgia (independent national bureau as part of the Government of Georgia) 5. Latvia (independent national bureau as part of the Government of Latvia) 6. Romania (independent national bureau as part of the Government of Romania) 7. France (Forensic Scientific Institutes within the French Gendarmerie) 8. Italy (Forensic Scientific Institutes within the Italian Carabineers)

The countries of Europe where forensic institutions are part of the Ministry of Internal Affairs (Police)	The countries of Europe where forensic institutions are part of the Ministry of Justice	The countries of Europe where forensic institutions are part of other state organizations
33. United Kingdom		9. Poland (Forensic Bureau of the State Security Agency), 10. Turkey (Forensic Center of the Gendarmerie of Turkey).

From Table 1, it can be seen that in the countries of Europe (in 33 countries), forensic institutions mostly and mainly were organized in the interior ministries (Police), further observation indicates that in 7 European countries, forensic institutions were organized in the ministries of justice (here it is important to mention that in some European countries, such as Lithuania, Russian Federation and Ukraine, forensic institutions exist both in the Ministry of Interior and in the Ministry of Justice), and eventually in 6 European countries, forensic institutions were organized under the jurisdiction of the Ministry of Interior, under the jurisdiction of the Ministry of Justice and exist as independent institutions of the governments of these countries (let us note that in addition to these organizational autonomous forensic institutions, there are also forensic institutions in the interior ministries of the aforementioned states in Georgia, Latvia and Romania). In further elaboration of the organization of forensic work in the countries of Europe, it is useful to mention that in some European countries, forensic institutions are positioned in higher education institutions — universities. Here is an example of university forensic laboratories, which are full members of ENFSI:

— Forensic Center at the Faculty of Forensic Science in Lausanne (Switzerland);

— Institute of Forensic Sciences at the Faculty of Legal Medicine — University of Istanbul;

— Center for Forensic Science, Strathclyde University (UK);

— Institute for Forensic Research, University of Krakow (Poland).

Current problems in the positioning of Forensic Affairs in the European countries. As can be seen from the data presented in Table 1, forensic work in the countries of Europe is mostly and mainly done in police institutions. Using forensic analysis, testing and expertise in theory and practice give rise to doubts about this way of positioning forensic work. The basic complaint relates to how the institution (police) involved in filing criminal charges simultaneously supports these applications with forensic evidence that it provides! Often,

during the main hearings in the presentation of evidence, a lawyer's complaint is heard in order to exclude forensic evidence obtained in police laboratories because the same authority (the police) is both the applicant for analysis (research, examination) and performs expert work (analysis, testing). It is useful here to mention a situation in practice that relates to the Forensic Institute in Tallinn (Estonia). Namely, in 2007, forensic affairs in Estonia were organized in the Ministry of Justice[1], respectively, the police forensic center and medical forensic bureaus were integrated into the Estonian Forensic Scientific Institute, organized in Ministry of Justice. However, several years later, the Estonian police for their needs hire forensics in the field of ballistics, dactyloscopy, mechanoscopy ... for practical and pragmatic reasons. Police authorities must have forensics in their composition because they have to support the forensic evidence[2] in the pre-trial procedure, when collecting evidence for the purpose of filing criminal charges. What would be a proposal for overcoming the mentioned issues? The best way to both theoretically and practically remove suspicion about performing forensic work in the police is the accreditation of the police forensic laboratories themselves. This is because the accredited forensic laboratories are under constant expert supervision by the competent national accreditation institution. The European National Accreditation Institutions are members of the European Accreditation Cooperation[3], which means that as long as they are in the process of accreditation (one accreditation is renewed every year, and every four years, the process is repeated, or re-accredited) police forensic laboratories are under expert supervision of the competent accreditation institution and the European Accreditation Cooperation. In this way, the theoretical and practical assurance is ensured by the integrity of forensic evidence obtained in forensic institutions that are organizationally positioned within the police.

Organizational positioning of Forensic Affairs in the Western Balkan countries. In the countries of the Western Balkans (those are the states that were created by the disintegration of Yugoslavia and Albania) forensic expert work is carried out within the Ministries of the Interior or in the police[4]. In Table 2, the basic data on organizational positioning of forensic institutions in the countries of the Western Balkans are presented.

[1] Ivanović A. Rump M. (2011). Accreditation process forensic center of Montenegro to the mentoring of the European Union (Projects EMFA-2). 10th Symposium of Forensic Sciences. Bratislava. Symposium Journal.

[2] Modly D. (2013). Some reasons that hinder the operational work of authorized officials of the organs of repression (police, prosecution, court). Annals of the Law Faculty of the University of Zenica. Issue № 12. P. 23–51.

[3] URL: http://www.european-accreditation.org/.

[4] It is useful here to mention that forensic expertise is carried out in 17 institutions in Bosnia and Herzegovina. Namely, the state of Bosnia and Herzegovina consists of two entities (in whose Ministries of Interior there are forensic centers), and also have a state-level forensic and expert agency, which is part of the State Ministry of Security. One of the two entities mentioned above, the Federation of Bosnia and Herzegovina, consists of ten cantons. In these cantons within their interior ministry, forensic laboratories exist. Furthermore, in the State of Bosnia and Herzegovina there is also one District (District Brčko). Also, the Interior Ministry of this District has its forensic laboratory. URL: https://www.pravosudje.ba/vstv/faces/docservlet?p_id_doc=21059.

Table 2

Basic data on state forensic institutions of the countries of the Western Balkans

The forensic institution and the state it originates from	Model of organizing forensic institutions in the Ministry of Internal Affairs (police)	Membership in ENFSI	Accreditation status
National Forensic Laboratory — Slovenia	Independent organizational unit within the General Police Directorate, Ministry of Internal Affairs	Full member since 1995	Accredited by ISO 17025, 2010
Center for Forensic Research, Testing and Expertise "Ivan Vučetić", — Croatia	Independent organizational unit within the Police Directorate, Ministry of Internal Affairs	Full member since 1998	Accredited by ISO 17025, 2010
Agency for Forensic Testing and Expertise — Bosnia and Herzegovina	Independent organizational unit within the Ministry of Security of Bosnia and Herzegovina	Not a member	Not accredited
Forensic Unit — Criminalistic Technical Center — Bosnia and Herzegovina (Republic of Serbia)	Part of the Police Support Directorate, the Police, the Ministry of the Interior of the Republic of Serbia	Not a member	Not accredited
Center for Forensic and Infrared Support — Bosnia and Herzegovina (Federation of Bosnia and Herzegovina)	Independent organizational unit within the Federal Police Administration, Federal Ministry of the Interior of Bosnia and Herzegovina	Not a member	Not accredited

The forensic institution and the state it originates from	Model of organizing forensic institutions in the Ministry of Internal Affairs (police)	Membership in ENFSI	Accreditation status
National Criminal Technical center — Serbia	Part of the Criminal Police Directorate, Police Directorate, Ministry of Internal Affairs of Serbia	Full member since 2009	Accredited by ISO 17025, 2014
Forensic center — Montenegro	Independent organizational unit within the Police Directorate, Ministry of Interior of Montenegro	Full member since 2009	Accredited by ISO 17025, 2014
Department of Criminalistic Technique — Macedonia	Part of the Public Security Bureau, Ministry of Internal Affairs of Macedonia	Full member since 2014	Accredited by ISO 17025, 2014
Department of Scientific Police — Albania	Independent organizational unit within the State Police, Ministry of Internal Affairs Albania	Not a member	Not accredited

As mentioned above, in these countries, there are dilemmas and doubts about the fact that the work on proofing forensic evidence is carried out in the ministries of internal affairs, that is in the police. In order to eliminate the dilemma whether it is legally founded the task of establishing evidence through the forensic expertise is to use the decision of the Constitutional Court of Croatia in the police, as a body that files criminal charges.

Namely, the practice of regular courts in Croatia, as well as the Constitutional Court, met with objections by the lawyer that the evidence produced by the forensic expertise obtained at the Center for Forensic Expertise of the Croatian Ministry of the Interior[1] was illegal because they were obtained in a forensic laboratory which is a part of the Ministry of Interior, and it (the Ministry) participates in the processing of criminal offenses and submits criminal charges! Furthermore, in addition to the lawyers' arguments, which seek the exclusion of the Center for Forensic

[1] URL: http://www.forenzika.hr/DefaultCKV.aspx.

Expertise of the Croatian Ministry of Internal Affairs, the forensic expert working on the examination of material traces from the scene of the criminal offense must not be employed in the same body as the prosecutor, the police officer, the defendant and damaged. The fact is that the Prosecutor's Office and the police (Ministry of the Interior) are in the same body (the government), which, in the opinion of some lawyers, is a sufficient reason for the exclusion of forensic staff from the center for Forensic Expertise of the Croatian Ministry of the Interior! The Constitutional Court of Croatia, in its opinion (response) on the remarks of individual lawyers, alleges that the center for Forensic Expertise of the Croatian Ministry of the Interior does not file criminal charges, but the Criminal Police is doing it. Furthermore, as the two most important segments of the opinion of the Constitutional Court to reject the defense of a lawyer, the following are stated[1]:

1. Since 1998, the Center for Forensic Expertise of the Croatian Ministry of the Interior has been a full member of the European Association of Forensic Scientific Institutions (ENFSI)[2]. It is the umbrella organization of national forensic institutions that networks 68 forensic laboratories from 36 European countries. The ENFSI has been recognized by the European Union as an eminent association in the field of forensic science, which provides its members with the quality, development and implementation of forensic expertise.

2. The Center for Forensic Expertise of the Croatian Ministry of Internal Affairs has been accredited in accordance with the international standard ISO 17025. Obtaining the accreditation status means the fulfillment of all the requirements of the standard ISO 17025. Such as: development and application of complete documentation of the management system, development and application of written procedures for performance of expert methods, validation of expertise methods, calibration and regular monitoring of the correctness of all instruments, checking the skills of employed experts, conducting internal independent checks, managing with nonconforming work, participating in international laboratory tests, are only some of the demanding requirements of the ISO 17025 standard.

The final opinion of the Constitutional Court of Croatia regarding the complaints of individual lawyers was as follows: *The legality of forensic expertise of the Center for Expertise of the Croatian Ministry of Internal Affairs, is not questioned by the existing legal argumentation since this expertise is organized organically in the Ministry of the Interior!*

In 1998, in the Republic of Slovenia (which is a member of the European Union since 2004[3]), the Constitutional Court ruled that evidence obtained by

[1] Legality of Evidence of the Center for Criminalistic Expertise "Ivan Vučetić". URL: http://iusinfo.com.hr/DailyContent/Topical.aspx?id=29266.

[2] URL: http://enfsi.eu/member/member-forensic-science-centre-ivan-vucetic-zagreb-croatia/.

[3] URL: https://europa.eu/european-union/about-eu/countries/member-countries/ slovenia_en.

forensic examination at the National Forensic Laboratory (hereinafter called as the Criminalistic Technical Center) of the Ministry of the Interior, cannot be recognized in court proceedings[1]! This decision of the Constitutional Court of Slovenia is explained by the fact that the National Forensic Laboratory organically belongs to the Ministry of the Interior, which is lawfully involved in the conduct of criminal investigations. For this reason, the evidence obtained at the National Forensic Laboratory would lose its process value. After this decision, forensic evidence obtained at the National Forensic Laboratory of the Ministry of Internal Affairs of Slovenia became usable only for the police, but not for the court! Experts from various state or private institutions or independent experts participate as forensic experts in court proceedings. It is not uncommon for forensic scientists from countries of the jurisdiction (of Italy, Croatia, Austria, etc.) to be hired in the courts of Slovenia. To date, the aforementioned decision of the Constitutional Court of Slovenia has not been changed and/or amended in some way. In continuation of the topic, here are a few examples of how the decision of the Constitutional Court of Slovenia that the examinations carried out in the Forensic Laboratory of the General Police Directorate of the Ministry of Internal Affairs cannot be evidence in court:

1. In one of the cases where the case was the criminal offense of Illicit Trafficking in Narcotic Drugs, the Defense attorney submitted an objection to the competent court that the findings of the experts engaged in the identification of the suspected drug cannot be accepted. The defense counsel argued that the experts who worked on the identification of the drug in question, employed by the Ministry of the Interior, who is also the applicant of the criminal complaint, and that because of this fact, the experts in this case could be biased. The lawyer also appealed to the decision of the Constitutional Court of Slovenia, that what was found by experts from the forensic laboratory of the General Police Directorate of the Ministry of Internal Affairs of Slovenia[2], could not be evidence in court! However, the competent court that examined the appeal of a lawyer in this case (illicit drug trafficking) states that the experts of the Forensic Laboratory of the General Police Administration of the Ministry of Internal Affairs of Slovenia did not produce an opinion in this case (that is only the opinion of the expert witness), but for posterity the Police Directorate of Novo Mesto (town in Slovenia) conducted an analysis of an unknown substance, which was submitted to the police by the said Police Administration. Therefore, the analysis of the unknown substance, obtained in the Forensic Laboratory of the General Police Directorate of the Ministry of the Interior of Slovenia, according to the interpretation of the court, is a professional opinion, but not an expert opinion!

[1] URL: http://odlocitve.us-rs.si/documents/e3/8d/u-i-132-952.pdf.

[2] National Forensic Laboratory. URL: https://www.policija.si/index.php/ component/ content/article/174-splono/9021-national-forenzini-laboratorij.

It is further stated that the competent court in this case will approve the evaluation of this expert opinion, according to the Code of Criminal Procedure and thus does not act in contradiction with the decision of the Constitutional Court of Slovenia (which refers to the fact that the examination, research and analysis obtained in the forensic laboratory of the General Police Directorate of the Ministry of the Interior of Slovenia, do not be evidence in court). Finally, there was the conclusion decision of the court in charge of defense of the defense (the defendant's lawyer), that the forensic laboratory of the General Police Directorate of the Ministry of Internal Affairs of Slovenia cannot perform an expert review (in this case, of unknown substance suspected of being a narcotic drug), but it can make an analysis, which does not mean that the said analysis could not be used as evidence in criminal proceedings. The court will proceed with the results of the analysis as well as with any other evidence in accordance with the principle of free assessment of evidence in the first instance of their objectivity and reliability.

2. In another case, the defense lawyer filed an objection challenging the conviction of the court against his client (defendant), because the same (court judgment) is based on the graphological evidence obtained in the Forensic Laboratory of the General Police Administration of the Ministry of the Interior of Slovenia. Namely, the client of the given lawyer was found guilty of the criminal offense of forging documents. The lawyer bases his complaint on the fact that the graphological examination of the driver's license (which was the subject of the criminal offense — forgery of documents) was carried out by the forensic laboratory of the General Police Directorate of the Ministry of Internal Affairs of Slovenia, and on the basis of the decision of the Constitutional Court of Slovenia, evidence obtained by laboratories of the General Police Directorate of the Ministry of the Interior of Slovenia are not evidence in the court, so the graphological expertise in question cannot be used as evidence in court! The reasoning of the lawyers regarding the bias of the expert witness, in this case is the same as in the previous case, which is stated in this paper. The lawyer also states in his complaint that his client (convicted) did not have the opportunity to engage another person (according to an attorney, an impartial expert), who will make the finding and opinion, and on that basis will declare whether the document (driver's license) is a forgery or original. According to the lawyer's complaint, the competent court replied that the court examines all the evidence of the procedure in the manner of determining objectivity and reliability in accordance with the principle of free assessment of evidence, so the evidence obtained in any institution is critically evaluated as any other evidence. Only the fact that the evidence was obtained by an expert working in a police forensic laboratory cannot be a reason for justified doubt about its validity and its exemption! The court will summon the expert witness (as well as everyone else) to the court at the main hearing in the courtroom and will conduct direct examination to determine his

credibility. If after the direct examination of the expert witness at the main trial in the courtroom, there is no suspicion in his work, the findings and opinion of this expert witness will be accepted as evidence in the proceedings. In the present case, the court notes that during the hearing of an expert from the Forensic Laboratory of the General Police Directorate of the Ministry of Internal Affairs of Slovenia, the defense did not object or challenged the expert-graphological part of the expert's work, for this reason the court dismissed the defense's objection as unfounded.

3. Furthermore, in one case of rape and murder committed[1] in the Republic of Slovenia, the Accused's lawyer filed an objection to the court. The objection is, inter alia, that the individual evidence submitted by the prosecutor against his client, obtained by research and examination in the Forensic Laboratory of the General Police Administration of the Ministry of the Interior of Slovenia. The complainant believes that the designation of a forensic laboratory by the General Police Directorate of the Ministry of Internal Affairs of Slovenia is an illegal mix of police and professional competencies. The Constitutional Court of Slovenia accepted the objection of the lawyer, but mostly because of some other violations of the legal provisions (police conduct during the search, poligraphic examination, detention, and other).

4. We also note the case of the abuse of firearms, in which the defense of the suspect filed an objection to the higher court instance, and the same was rejected by the Higher Court in Ljubljana (Republic of Slovenia)[2]! Namely, in a criminal case, as an expert in the field of tracing firearms, an officer of the Forensic Laboratory of the General Police Administration of the Ministry of the Interior of Slovenia was engaged. The defense counsel filed an objection on the grounds that his findings and opinion should be discredited, because the expert is employed by a body (Ministry of Internal Affairs) who files a criminal complaint, and therefore is in conflict of interest! However, the High Court in Ljubljana (the Republic of Slovenia) made this objection unfounded. The explanation of the decision of the Higher Court is based on the fact that an expert witness employed by the Forensic Laboratory of the General Police Administration of the Ministry of Internal Affairs of Slovenia is also a registered court expert at the Ministry of Justice of the Republic of Slovenia. Furthermore, the explanation states that the expert did not undertake any actions in the form of interrogation of the suspect, the collection of evidence and/or any other operational action. He worked solely and exclusively on the processing of his material (material evidence) in the forensic laboratory. In conclusion of the decision of the High Court, it is stated that: Only the indication in the complaint that the expert is employed in the

[1] URL: http://www.sodisce.si/vsrs/odlocitve/23221/.
[2] URL: http://sodisce.si/vislj/odlocitve/2015081111393052/.

Forensic Laboratory of the General Police Directorate of the Ministry of Internal Affairs of Slovenia, but without submitting any concrete proposal, is not sufficient to exclude the expert from the case.

Conclusion. Forensic research, investigation and expert work is one of the most important, if not the most important, segments of all criminal crime investigations. The evidence obtained through forensic expertise must meet the requirements of science, profession, and, above all, such proof must exclude any kind of bias. As explained in the introduction of this paper, since the founding of forensic laboratories, organizational findings have been found in the Ministries of the Interior or in the police. Due to the fact that the police is a body that undertakes the task of investigating criminal offenses (investigation, examination) and ultimately submitting criminal charges against perpetrators of criminal acts, there has long been (not) justified objections to forensic evidence obtained at the Ministry of the Interior. For most of the countries in Europe, forensic laboratories are organized in the Ministry of the Interior (police). The decision to remove suspicions about the bias of evidence obtained in police forensic laboratories is in the accreditation of forensic laboratories. The accredited forensic laboratory works under the permanent professional supervision of the competent accreditation body (the national accreditation body, which must be a member of the European Accreditation Cooperation). In the opinion of the author of this paper, thus (by accreditation of forensic laboratories), we can avoid every objection to the bias of evidence obtained in the Forensic Laboratory of the Interior Ministry (of Police)!

It is useful to mention in the end that, in 2015, the General Secretariat of the Council of Europe has issued a document: Creation of a European forensic science 2020 (Council conclusions on the vision for European Forensic Science 2020 including the creation of a European Forensic Science Area and the development of forensic science infrastructure in Europe)[1]. Among other things, this document of the Council of Europe prescribes that by 2020, a register (list) of all institutions dealing with forensic expertise in Europe shall be established. For the purpose of implementing this task, the Director of the Forensic Institute of the Federal Criminal Police of the Germany in Wiesbaden, through the ENFSI (European Association of Forensic Scientific Institutions)[2], sent his opinion on this proposal. In his response, he stated that in Germany the forensic expertise was carried out at the Federal Forensic Institute (Wiesbaden) and 16 provincial forensic laboratories. All of these forensic laboratories are part of the Provincial Police (Landeskriminalamt).

[1] URL: https://www.consilium.europa.eu/uedocs/cms_data/docs/pressdata/en/jha/ 126875.pdf.
[2] URL: http://enfsi.eu/.

ОРГАНІЗАЦІЯ СУДОВО-ЕКСПЕРТНИХ ЛАБОРАТОРІЙ У ЄВРОПІ СТОСОВНО ЗАХІДНИХ БАЛКАНСЬКИХ КРАЇН — ПРАКТИЧНИЙ АСПЕКТ

А. Іванович

Представлено огляд організаційного розташування судових лабораторій у країнах Європи з особливим акцентом на країни Західних Балкан. Це пов'язане з тим, що регіон Західних Балкан відносно невеликий, але на його території перебуває велика кількість країн, майже в усіх з яких організовані судово-експертні лабораторії. При цьому, більшість судово-експертних лабораторій організовані в міністерствах внутрішніх справ, тобто в поліції. Судові експертні дослідження є одним з найбільш важливих, якщо не найважливішим сегментом усіх розслідувань кримінальних злочинів. Дані, отримані за допомогою судової експертизи, повинні відповідати вимогам науки, професії експерта, і, насамперед, такі докази повинні виключати будь-яке упереджене ставлення. Із моменту створення судово-експертних лабораторій організаційно вони перебували в міністерствах внутрішніх справ або в поліції. У зв'язку з тим, що поліція є органом, який покладає на себе завдання розслідування карних злочинів (проведення розслідування, експертиз) і в остаточному підсумку надає кримінальні обвинувачення (докази) стосовно осіб, що вчинили злочинні діяння, то вже давно висуваються обґрунтовані (і не обґрунтовані) заперечення проти судових доказів, отриманих в експертних лабораторіях Міністерства внутрішніх справ. Рішення про усунення підозр щодо упередженості доказів, отриманих у поліцейських судово-експертних лабораторіях, полягає, на думку автора, у проведенні їх акредитації. Акредитована судово-експертна лабораторія працює під постійним професійним наглядом компетентного органа з акредитації (національного органу з акредитації, який повинен бути членом Європейської кооперації з акредитації). У такий спосіб (шляхом акредитації судових лабораторій) можна уникнути будь-яких заперечень проти упередженості доказів, отриманих у судово-експертних лабораторіях міністерств внутрішніх справ (поліції).

Ключові слова: судово-експертна лабораторія, поліція, акредитація.

ОРГАНИЗАЦИЯ СУДЕБНО-ЭКСПЕРТНЫХ ЛАБОРАТОРИЙ В ЕВРОПЕ ПРИМЕНИТЕЛЬНО К ЗАПАДНЫМ БАЛКАНСКИМ СТРАНАМ — ПРАКТИЧЕСКИЙ АСПЕКТ

А. Иванович

Представлен обзор организационного расположения судебных лабораторий в странах Европы с особым акцентом на страны Западных Балкан. Это связано с тем, что регион Западных Балкан относительно невелик, но на его территории находится большое количество стран, почти во всех из которых организованы судебно-экспертные лаборатории. При этом, большинство судебно-экспертных лабораторий организованы в министерствах внутренних дел, то есть в полиции. Судебные экспертные исследования являются одним из наиболее важных, если не самым важным сегментом всех расследований уголовных преступлений. Данные, полученные с помощью судебной экспертизы, должны соответствовать требованиям науки, профессии эксперта, и, прежде всего, такие доказательства должны исключать любое предвзятое отношение. С момента создания судебно-экспертных лабораторий организационно они находились в министерствах внутренних дел или в полиции. В связи с тем, что полиция является органом, который возлагает на себя задачу расследования уголовных преступлений (проведение расследования, экспертиз) и в конечном итоге предоставляет уголовные обвинения (доказательства) в отношении лиц, совершивших преступные

деяния, то уже давно выдвигаются обоснованные (и не обоснованные) возражения против судебных доказательств, полученных в экспертных лабораториях Министерства внутренних дел. Решение об устранении подозрений относительно предвзятости доказательств, полученных в полицейских судебно-экспертных лабораториях, заключается, по мнению автора, в проведении их аккредитации. Аккредитованная судебно-экспертная лаборатория работает под постоянным профессиональным надзором компетентного органа по аккредитации (национального органа по аккредитации, который должен быть членом Европейской кооперации по аккредитации). Таким образом (путем аккредитации судебных лабораторий), можно избежать любых возражений против предвзятости доказательств, полученных в судебно-экспертных лабораториях министерств внутренних дел (полиции).

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ACTUAL PROBLEMS OF COOPERATION WITH ORGANIZATIONS OF FOREIGN COUNTRIES IN THE FIELD OF FORENSIC SCIENCE

International cooperation is one of important areas of work of the forensic science institutions and higher education institutions of Ukraine, in particular, Hon. Prof. M. S. Bokarius Kharkiv Research Institute of Forensic Examinations and Kharkiv National Medical University. One of results of international cooperation is the improvement of Ukrainian legislation and its adaptation to the norms of international law. Currently, international relations in the area of conducting forensic expert activity are insufficiently regulated, which requires more detailed elaboration of normative legal acts in the aspect of international treaty relations. The ways of improvement of the norms of the current legislation and activity of the forensic science institutions of the Ministry of Justice of Ukraine are offered.

Keywords: forensic expert activity, international cooperation, research institutes forensic examinations, experience exchange, internship, interaction, international agreement.

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International cooperation is one of the important areas of work of the forensic science institutions and higher education institutions of Ukraine, in particular, Hon. Prof. M. S. Bokarius Kharkiv Research Institute of Forensic Examinations (hereinafter: KhRIFE) and Kharkiv National Medical University (hereinafter: KhNMU). This activity is closely linked with scientific and educational processes. It focuses on improving the exchange of knowledge and technology, the development of innovative forms of science and education based on the study of foreign experience. Law enforcement bodies, courts are extremely interested in further improvement of forensic expertise, training of highly qualified judicial experts, developing the theoretical basis for forensic expertise and strengthening the system of forensic institutions, taking into account both domestic and foreign experience.

The role of international cooperation in the field of forensic expertise has increased significantly. This is due to processes in the economy, internationalization and globalization of all spheres of human activity, the rapid development of communications, the development of international scientific relations, which can only be carried out on the basis of a broad partnership. The current state of forensic expert activity is impossible without systematic recourse to the practice of forensic examination and scientific activity in other countries. The processes taking place in the modern world require new forms of development of international cooperation in the field of forensic expertise.

At the same time, despite the fact that there are a large number of works on judicial expertise in Ukraine, much of the scientific publications on forensic expertise are devoted to the criminal-procedural, methodological and organizational aspects of forensic-expert activity. In scientific publications, the issues of such cooperation and ways of resolving[1] the issue of cooperation between judicial experts and forensic expert institutions of Ukraine with the

[1] Simakova-Yefremian E. B. (2017) *Do pytannia pro vzaiemozalezhnist yevropeiskykh intehratsiinykh protsesiv i tendentsii intehratsii spetsialnykh znan v Ukraini Teoriia ta praktyka sudovoi ekspertyzy i kryminalistyky* [On the issue of the interdependence of European integration processes and trends of the integration of special knowledge in Ukraine Theory and Practice of Forensic Science and Criminalistics]. Kharkiv : Pravo, Issue 17. P. 152–158 [in Ukrainian]; Lozovoi A. Y., Simakova-Yefremian E. B., Derecha L. N. (2013) *K voprosu o mezhdunarodnom sotrudnichestve v oblasti sudebnoj jekspertizy. Teorija i praktika sudebnoj jekspertizy v sovremennyh uslovijah: materialy 4-j Mezhdunar. nauch.-prakt. konf., Moskva, 30–31 janvarja 2013* g. [On the issue of international cooperation in the field of forensic science. Theory and practice of Forensic Science in modern conditions: Materials of the 4th International Academic Conference. Moscow, January 30–31, 2013]. Moscow : Prospekt, p. 194–198 [in Russian]; Lozovoi A. Y., Derecha L. N. (2014) *Razvytye mezhdunarodnoho sotrudnychestva v oblasty sudebnoi эkspertyzы. Krymynalystyka y sudebnaia эks-pertyza: nauka, obuchenye, praktyka: v 2-kh ch.* [On the issue of international cooperation in the field of forensic science. Forensic Science and Criminalistics. science, training, practice: Composed of 2 vol.]. Kharkiv : Publishing house: Apostil, p. 139–147 [in Russian]; Khazyev Sh. N. (2009) *Istorija vozniknovenija i razvitija mezhdunarodnogo sotrudnichestva v oblasti kriminalistiki i sudebnoj jekspertizy. Juridicheskie nauki* [Hhistory of the emergence and development of international cooperation in the field of forensic science and criminlistics. Legal Sciences]. № 5, p. 19–23 [in Russian].

European network of forensic institutions, as well as Eurasian forensic expert cooperation and the implementation of international standards for forensic expert activity[1] are clearly not considered sufficiently.

The questions of international cooperation have been reflected in Articles 22–24 of the Law of Ukraine *On Judicial Examination*[2] (hereinafter — the Law on Expertise), they are also regulated in international treaties on mutual legal assistance[3] etc.

The development of forensic expert institutions (hereinafter: FSI) of the Ministry of Justice of Ukraine and the expansion of judicial expertise have a positive effect on the activities of FSI on the implementation of international contacts with foreign institutions: mutual information on various areas of expert research, organization of joint international scientific and practical conferences, symposia, seminars, traineeships for the exchange of experience, training of experts, holding videoconferences with staff of foreign FSI on forensic expertise, about familiarity with the structure, organization of activities and advanced methods of conducting forensic examinations and expert studies, which allows professionals to constantly keep abreast of the latest advances in science and to use the experience of their colleagues from other countries. An effective form of international cooperation is the conduct of mutual traineeships of forensic experts and scholars in judicial and expert institutions of other states.

One of the directions of the development of international cooperation is

[1] Khocha V. V., Spasenko I. O. (2017) *Shchodo vdoskonalennia administratyvnoho zakonodavstva, yake rehuliuie pytannia akredytatsii sudovo-ekspertnykh ustanov Ukrainy. Arotskerivski chytannia : zb. materialiv mizhnar. nauk.-prakt. konf., prysviach. 90-richchiu vid dnia narodzh. vydat. vchenoho-kryminalista, d-ra yuryd. nauk, prof. L. Yu. Arotskera, Poltava, 25 trav. 2017 r.* [Concerning improvement of the administrative legislation, which regulates the issues of accreditation of forensic science institutions of Ukraine. Arotsker readings: Content of International Academic Conference, devoted to 90th anniversary of birthday. Output scientist-criminalist, Dr. lawyer. Sciences, prof. L. Yu. Arotsker, Poltava 25 May 2017]. Kharkiv : Pravo, p. 56–58 [in Ukrainian]; Khocha V. V. (2016) *Akredytatsiia sudovo-ekspertnykh ustanov Ukrainy yak diievyi sposib kompleksnoho pidtverdzhennia yikh kompetentsii. Suchasni napriamy rozvytku sudovoi ekspertyzy ta kryminalistyky: tezy dop. nauk.-prakt. konf., prysviach. pam'iati Zasl. prof. M. S. Bokariusa, Kharkiv, 20 hrud. 2016 r.* [Accreditation of forensic institutions of Ukraine as an effective way of a comprehensive confirmation of their competence. Modern directions of forensic science and criminlistics. Theses of academic coference devoted memory of professor. M. S Bokarius, Kharkiv, 20 December 2016]. Kharkiv : KhNUIA, p. 294–297 [in Ukrainian]; The same author. (2016) *K voprosu administrativno-pravovogo obespechenija akkreditacii sudebno-jekspertnyh uchrezhdenij Ukrainy. Vostok-Zapad: partnerstvo v sudebnoj jekspertize. Aktual'nye voprosy teorii i praktiki sudebnoj jekspe-rtizy: materialy mezhdunar. nauch.-prakt. konf., Almaty, 27 okt. 2016 g.* [On the issue of administrative and legal provision of accreditation of forensic institutions of Ukraine. East-West: partnership in forensic science. Actual issues of theory and practice of Forensic Science. Content of international Academic Conference. Almaty, 27, November. 2016], Almaty, p. 437–440 [in Russian].

[2] *Pro sudovu ekspertyzu : Zakon Ukrainy vid 25.02.1994 № 4038-XII. Vidom. Verkhov. Rady Ukrainy* [On Judicial Examination Law of Ukraine from 25.02.1994 № 4038–XII. Bulletin of Verkhovna Rada of Ukraine] 1994. № 28. Art: 232 [in Ukrainian].

[3] For example, see: *Konventsiia pro pravovu dopomohu i pravovi vidnosyny u tsyvilnykh, simeinykh i kryminalnykh spravakh* [Convention on Legal Assistance and Legal Relations in Civil, Family and Criminal Matters]. URL: http://zakon.rada.gov.ua/laws/show/997_009 [in Ukrainian].

the improvement of the legislation of Ukraine and its adaptation to the norms of international law. Each state has its own legal acts, and therefore different issues of conducting forensic examinations are regulated in different ways. According to the laws of most countries, such as Ukraine, the Republic of Moldova, the Republic of Kazakhstan, the United States and others, the certification of forensic experts is carried out by expert-qualification commissions of ministries and departments, judicial examinations are carried out both in state expert institutions and private court experts. In the Republic of Moldova, the Russian Federation, unlike in Ukraine, forensic examinations (handwriting, tramway, ballistic, explosive engineering, portrait expertise, technical examination of documents, etc.) are carried out not only in state but also in non-governmental expert institutions as well as private court experts. In accordance with the Law on Expertise, forensic expert activities related to the conduct of forensic, forensic and forensic psychiatric examinations are carried out exclusively by state specialized institutions.

The development of international liaison contacts continues to be relevant. In 2017–2018, cooperation agreements were signed between KhRIFE and the National Center for Judicial Expertise under the Ministry of Justice of the Republic of Moldova, the State Committee of Forensic Expertise of the Republic of Belarus, the National Bureau of Expertise of the Republic of Armenia and the Center for Forensic Examination of the Ministry of Justice of the Republic of Kazakhstan.

The implementation of a number of measures to ensure the quality of work standards at the world level is important as it significantly broadens the horizons in the field of forensic expertise, promotes the sustainable development of forensic expertise. Thus, in 2017 a meeting was held with the participation of the Deputy Head of ENFSI, the Director of the Center for Forensic Examination of the Republic of Lithuania, Dr. Gabriel Youdkayt-Grunkien and the permanent representative at ENFSI, Deputy Director of the Forensic Expert Center of Montenegro, Dr. Alexander Ivanovich, who came to the institute with a mission of inspection of his activities in connection with the filing of an application for entry to the European Network of Forensic Investigations (ENFSI). A high evaluation of the work of KhRIFE by international experts allowed the institute to become a member of this organization in the future.

In January 2018, the KhRIFE obtained the accreditation certificate certified by the National Accreditation Agency of Ukraine on compliance with General requirements for the competence of testing and calibration laboratories Now the Institute is taking steps to obtain the Accreditation Certificate for compliance with the requirements of the international standard ISO / IEC 17020: 2012 “Conformity Assessment. Requirements for the activities of different types of inspection bodies”. The accreditation system is

the basis for recognizing the results of conformity assessment both in Ukraine and abroad.

One can also note the ever-increasing positive tendency to expand the scientific-methodical and technical base, the introduction and development of new types of forensic examinations and expert specialties. So, only in 2017, the staff of KhRIFE developed three new directions of research in expert fields: *Research on urban electric transport*, *Investigation of the circumstances and mechanism of man-made explosions* and *Exploration of safe operation of elevators*, the relevant documentation that was considered and approved for introduction in practice by the Presidium of the scientific advisory and methodical council on issues of forensic examination under the Ministry of Justice of Ukraine. In these new areas, training programs, typical thematic plans, topics, the list of literature recommended for study by the experts have been developed. Introduction of these new specialties expands the range of tasks, the solution of which nowadays is an urgent need for expert practice. In 2018, the staff of the KhRIFE are actively working on the introduction of new types of expertise in the system of the FSI of the Ministry of Justice of Ukraine: gemological (mineralogical), veterinary, etc. In addition, methods of conducting both traditional and new types of expert research are developed and improved.

One of the forms of international cooperation is the joint development and exchange of expert research methods, the exchange of information and positive experience in implementing R&D on topical topics, the introduction of R&D results into expert practice. The scientific potential of the FSI of the Ministry of Justice of Ukraine is quite powerful, but it can be raised to a higher level, combining the efforts of the FSI of different states and expanding their interaction. Cooperation between States can be an important factor in complementing domestic efforts for the development of each country.

In this aspect, the KhRIFE carries out joint scientific work with the staff of foreign countries: The active work of KhRIFE and the National Center for Forensic Expertise of the Ministry of Justice of the Republic of MoldoV. A. are taking place in two joint research projects: the development of a scientific report *Improvement of the classification of forensic examinations* and the methodology of handwritten research of handwritten notes performed in Latin.

In Art. 24 *International Research Cooperation* of the Law on Expertise states that state specialized institutions that perform judicial examinations use the right to establish international scientific relations with the institutions of forensic examinations, criminalistics, etc. of other states, to conduct joint scientific conferences, symposia, seminars, exchange of interns, scientific information and publications, and to conduct joint publications in the field of forensic examination and criminalistics. In our opinion, to increase the work

in this direction, this article of the Law should be specified, supplementing the norm with measures for joint research and development and training of scientific personnel of higher qualification (the last measure is related to obtaining a license from Kharkiv RIFE for training in the field of training of applicants Higher education of the degree of Doctor of Philosophy in the specialty 081 "Law", on the profile of forensic expert activity and the opening of postgraduate study in the Kharkiv Scientific Research Institute on the specialty 081 "Law" (12.00.07 — Administrative law and process, financial law, information law, 12.00.09 — criminal procedure and criminology, forensics, investigative operations).

Consequently, we can conclude that there is a need for more detailed elaboration of the norms of legislation on scientific and expert work on the basis of international contractual relations. The latter can be achieved by concluding separate international agreements on cooperation in the field of conducting forensic expert activity, as well as international agreements on cooperation between the FSI of Ukraine and foreign states. Such agreements may regulate cooperation in the scientific field, the implementation of various scientific developments, training of specialists, improving their qualifications, etc.

Taking into account the above, in connection with the fact that one of the priority tasks of the RIFE, in particular, the KhRIFE, in the direction of international cooperation, in addition to establishing and developing direct contacts, collecting and analyzing information on the possibility of cooperation with FSI abroad, participation in international scientific programs, conferences, seminars, invitations of foreign forensic experts, internship of forensic experts abroad, is also the creation of conditions for the further development of scientific cooperation for joint research and development side with foreign FSI, preparation of scientific personnel of the highest qualification, we offer art. 24 of the Law on Expertise should be worded as follows: "State specialized institutions that perform forensic examinations shall enjoy the right to establish international scientific relations with institutions of forensic examinations, criminalistics, etc. of other states for the purpose of joint research and development, exchange of scientific and methodological information and print publications, the use of common international information funds, data banks, training, retraining and advanced training of forensic experts, international conferences, symposiums, seminars, joint publications in the field of forensic examination and criminalistics, training of scientific personnel of higher qualification".

One of the strategic directions of the development of the KhRIFE is the observance of international standards for the training of experts and integration into the European educational and scientific space. Today, the international activity of KhRIFE is aimed at establishing and developing

international relations and international cooperation by organizing measures for forming the circle of foreign partners, creating conditions for cooperation with foreign citizens, scientific institutions, and international organizations. That is why it is desirable to provide a structural unit for international relations in the staffing list of institutions of forensic expertise.

For example, the Department of International Relations at the KhNMU was founded in 1994 with the aim of expanding and further improving the university's relations with foreign partners. As a structural subdivision of the KhNMU, the Department of International Relations directs its activities to expand and deepen its international contacts, to increase the authority of the university in the world. The purpose of this department of the KhNMU is to provide organizational, technical and informational and methodological support to the international activities of the University, development of cooperation with international organizations, educational institutions, etc.

When establishing the Department of International Relations in the KhRIFE, its main functions (by analogy with such a department in the KhNMU), it is proposed to note:

— search for foreign partners, forms and foundations for international cooperation;

— organization of cooperation of the units of the Institute with foreign partners, accounting and reporting on this type of activity;

— informing the structural units of the Institute for the Study of Participation in International Programs, Conferences, Seminars, Assistance in the Preparation and Preparation of the Required Documents;

— registration of necessary documents of the staff of the institute, which are sent for business trip abroad;

— organization of reception of foreign delegations and individual foreign citizens;

— participation in the preparation of documents for conducting training, internship, examination examining the qualification of a judicial expert of foreign citizens;

— on behalf of the director of the institute, the preparation of draft letters to the leaders of the FSI of foreign states on issues of forensic expert activity;

— creation of information databases on international research and education programs for forensic experts, etc.

The Department of International Affairs of the KhRIFE should also coordinate the activities of the institute in the field of international contacts on the conclusion of international cooperation agreements, etc. Currently, the functions of such a unit are assigned to the laboratory of theoretical research, editorial and publishing and scientific and methodological activities of the

KhRIFE, but the selection of the relevant unit, in our opinion, will increase the effectiveness of the institution.

We would like to draw attention to one of the most important means of strengthening the links between the scientists of the FSI of different countries — holding joint scientific and practical conferences, seminars, roundtables on issues of forensic expert activity, since creative cooperation, communication with colleagues always gives a positive result. In this regard, in the past two years, only two international scientific and practical conferences were held on the topic *Current Issues of Forensic Science and Criminalistics, Arocker's Readings* and a seminar on international participation *The Concept of Accreditation in the field of Forensic Science*, the organizer of which was the KhRIFE. During their work there was a thorough exchange of views on the actual problems existing in Ukraine and foreign countries, at the present stage of development of forensic examination and criminalistics. The participants of these events supported the necessity of expanding international ties in the field of forensic examination, which should be built on the basis of cooperation between state authorities and judicial and expert institutions of different countries, noted the main achievements in the field of forensic examination, discussed the problems of its development and suggested ways of their solution. In the next six months it is also planned to hold an international scientific and practical conference on the topic Topical issues of Forensic Sand criminalistics", dedicated to the 150th anniversary of the birth of the Honored Professor M. S Bokarius (the institutes-organizers: KhRIFE and KhNMU).

It is especially important to note this kind of interaction of FSI at the international level, as a mutual preparation of reviews and reviews on scientific and methodological developments: methodical manuals, methodical recommendations, scientific articles, other materials, according to the results of research work on various theoretical and practical issues of forensic examination, as well as abstracts of doctoral and candidate's dissertations; the exchange of scientific information and publications, etc. Since 2001, the specialized edition of Ukraine on legal sciences is published annually a scientific journal *Theory and practice of forensic science and criminalistics* that founders are the Hon. Prof. M. S. Bokarius Kharkiv Research Institute of Forensic Examinations and Yaroslav the Yaroslav Mudryi National Law University, where content of scholars in the field of forensic examination, criminalistics, the criminal process of Ukraine and abroad are published. Scientific journal is included in the international science-computer database Index Copernicus and assigned index 64 of 100, which consists of many factors such as standardization, stability, digital edition, etc. According to the order of the Ministry of Education and Science, Youth and Sports of Ukraine dated October 17, 2012, № 1112 *On the publication of the results of theses for obtaining the degrees of a doctor and a candidate of sciences* (as amended by the orders of the Ministry of Education and Science,

Youth and Sport of 03.12.2012 № 1380, dated March 21, 2013, № 365), among the requirements for obtaining a scientific degree, mandatory publications in foreign professional editions or editions of Ukraine, which are entered in the register of international scientometric bases are foreseen. According to these requirements for obtaining the degree of the doctor of sciences it is necessary to have at least four publications, for the candidate of sciences; at least one. Scientometric database is a bibliographic and abstract database with tools for tracking the citation of articles published in scientific journals. The presence in the scientific and educational organizations of scientists with a high index of citation, says the high efficiency and effectiveness of the institution as a whole. In order to improve the scientific and metric indicators, which carry quantitative assessments and a comparative analysis of the scientific activity of authors and scientific institutions, it is necessary to publish in foreign and domestic journals that are part of the well-known science-computer databases, to register and to create their own author's profile in international scientific and mathematical bases.

Currently, international contacts have become much easier thanks to greater openness of borders between states, the introduction of new communication and communication technologies (the Internet), the existence of many electronic publications on forensic and criminalistics, online conferences, etc.

So, summing up the above, one can state that the continuation of the work on active international cooperation between the FSI of the Ministry of Justice of Ukraine and the FSI of other countries in the field of forensic expertise is relevant today. The main directions of international cooperation are: improving the legislation of Ukraine and its adaptation to the norms of international law; conclusion of new interstate agreements on cooperation in the field of forensic examination; elaboration of proposals for ensuring high quality of forensic examinations on the basis of introduction of requirements of international standards and their accreditation into the practical activity of forensic expert institutions; provision of scientific-methodical, consultative and practical assistance in matters of scientific and forensic expert activity; improvement of the system of introduction in the expert practice of the latest domestic and foreign methods of conducting forensic examinations; accumulation of international and national experience of expert and scientific work; joint research, joint development of methods and methods of conducting forensic examinations taking into account the immediate needs of justice; organizing work to improve the exchange of information on new developed and implemented in practice research methods, research developments, collections, educational, methodological and reference publications, planned scientific, scientific and methodical activities; conducting international internships in order to exchange experience with experts from other countries, cooperation in

training of scientific personnel of higher qualification, etc.

Thus, the development of international cooperation in the field of forensic expertise will contribute to enhancing the scientific and methodological potential of the FSI, developing new directions and types of forensic expertise, and increasing the effectiveness of the fight against crime. An analysis of further study of this issue will allow us to identify the most urgent areas of development of international cooperation, the main trends and perspectives of the interaction of FSI in the modern world.

АКТУАЛЬНІ ПРОБЛЕМИ СПІВРОБІТНИЦТВА З ОРГАНІЗАЦІЯМИ ІНОЗЕМНИХ ДЕРЖАВ У СФЕРІ СУДОВО-ЕКСПЕРТНОЇ ДІЯЛЬНОСТІ

Е. Б. Сімакова-Єфремян, Л. М. Дереча, В. В. М'ясоєдов

Міжнародне співробітництво є одним із важливих напрямів роботи судово-експертних установ і закладів вищої освіти України, зокрема, Харківського науково-дослідного інституту судових експертиз ім. Засл. проф. М. С. Бокаріуса та Харківського національного медичного університету. Одним із результатів міжнародної співпраці є удосконалення законодавства України і його адаптація до норм міжнародного права. Нині міжнародні взаємовідносини у сфері здійснення судово-експертної діяльності є недостатньо врегульованими, що потребує більш детального опрацювання нормативно-правових актів в аспекті міжнародних договірних відносин. Запропоновано шляхи вдосконалення норм чинного законодавства та діяльності судово-експертних установ Міністерства юстиції України.

Ключові слова: судово-експертна діяльність, міжнародне співробітництво, науково-дослідні установи судових експертиз, обмін досвідом, стажування, взаємодія, міжнародний договір.

АКТУАЛЬНЫЕ ПРОБЛЕМЫ СОТРУДНИЧЕСТВА С ОРГАНИЗАЦИЯМИ ИНОСТРАННЫХ ГОСУДАРСТВ В СФЕРЕ СУДЕБНО-ЭКСПЕРТНОЙ ДЕЯТЕЛЬНОСТИ

Э. Б. Симакова-Ефремян, Л. Н. Дереча, В. В. Мясоедов

Показана роль международного сотрудничества в области судебно-экспертной деятельности. На развитие судебно-экспертных учреждений Министерства юстиции Украины и расширение возможностей судебных экспертиз положительно влияет их деятельность по осуществлению международных контактов: организация совместных международных научно-практических конференций, семинаров, стажировок специалистов с целью обмена опытом работы, обучение судебных экспертов, ознакомление с организацией деятельности и передовыми методами проведения судебных экспертиз и экспертных исследований, позволяет специалистам постоянно находиться в курсе последних достижений науки и использовать опыт своих коллег из других стран. В настоящее время осуществляется работа по проведению совместных научных разработок, подготовке научных кадров высшей квалификации, однако в статье 24 Закона о судебной экспертизе это не указано, в связи с чем предлагаем ее изложить в такой редакции: «Государственные специализированные учреждения, выполняющие судебные экспертизы, пользуются правом устанавливать международные научные связи с учреждениями судебных экспертиз, криминалистики и так далее других государств с целью проведения совместных научных исследований и разработок, обмена научно-методической

информацией и печатными изданиями, использования общих международных информационных фондов, банков данных, проведения подготовки, переподготовки и повышения квалификации судебных экспертов, международных конференций, симпозиумов, семинаров, осуществления совместных изданий в области судебной экспертизы и криминалистики, подготовки научных кадров высшей квалификации». В связи с дальнейшим развитием международного сотрудничества желательно в штатном расписании судебно-экспертных учреждений предусмотреть такое структурное подразделение, как отдел международных связей. В 2018 году ХНИИСЭ получил Аттестат об аккредитации на соответствие требованиям международного стандарта ISO/IEC 17025. Сборник научных трудов «Теория и практика судебной экспертизы и криминалистики» включен в международную наукометрическую базу данных Index Copernicus. Развитие международного сотрудничества в области судебной экспертизы будет способствовать повышению научно-методического потенциала судебно-экспертных учреждений, разработке новых направлений и видов судебно-экспертной деятельности, повышению эффективности борьбы с преступностью.

Ключевые слова: судебно-экспертная деятельность, международное сотрудничество, научно-исследовательские учреждения судебных экспертиз, обмен опытом, стажировки, взаимодействие, международный договор.

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ESSENCE, STRUCTURE AND OBJECTIVES OF SPECIAL KNOWLEDGE USE IN LEGAL PROCEEDINGS

Characteristics of special knowledge are considered. It is demonstrated that knowledge is information from various fields of activity, except for law, specially referred to only in the proceedings, are acquired in the process of learning and practical experience, are used on the basis of skills and skills in procedural and non-procedural forms in order to obtain evidence and guidance information.

Keywords: special knowledge, legal process, legal knowledge, forms and purposes of special knowledge use.

Special knowledge is the most controversial notion in the theory of any type of legal proceedings. The content, forms of use and subjects of the application of special knowledge in the investigation of crimes, judicial review of criminal, civil, administrative, economic cases constantly attract

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attention of processual, criminologists, forensic experts. Questions about the nature of special knowledge today, as well as for many years, are intensively discussed in scientific circles. Lawyers examine them separately or when considering the features of evidence. Scientists are trying to disclose the concept of special knowledge, to note their volume, special features and features, but so far, no position of researchers is generally accepted, which indicates the need for further development of this problem. Ukrainian scientists S. S. Bychkova, O. O. Bondarenko, T. V. Varfolomeyeva, V. D. Glushkova, V. G. Goncharenko, I. V. Gora, N. I. Klimenko, V. V. Kovalenko, O. A. Komach, A. T. Komzyk, M. V. Kostytsky, A. A. Kravchenko, V. K. Lisichenko, G. M. Nadgorny, I. V Pyrih, V. N. Revach, R. M Romanenko, B. Romanyuk, K. A. Sadchikova, M. Ya. Sega, V. V. Semenov, Z. M. Sokolovsky, V. V. Tsirkal, Zh. V. Vasiliev-Shalamov, V. Yu. Shepitko and others contributed to the study of problems of using special knowledge in legal proceedings. Among the foreign scientists, the phenomenon of special knowledge was studied by T. V. Avianyanov, V. D. Arseniev, O. P. Grishin, A. G. Davtyan, O. O. Eksarkhopulo, O. O. Zaitseva, O.M. Zinin, P. P. Ishchenko, L. M. Isaeva, Yu. H. Korukhov, L. V. Lazareva, T. A. Liluashvili, V. M. Makhov, Y. K. Orlov, M. O. Radionova, O. R. Rossinskaya, O. V. Selina, I. M. Sorokotiagin, V. Stepanov, T. D. Telegin, I. I. Trapeznikova, M. K. Treushnikov, L. G. Shapiro, S. A. Shaypher, S. P. Scherba and others. At the same time, there is still no consensus among scientists and practitioners regarding the key issues of this procedural category.

The purpose of the article is to analyze the views of scientists and formulate the author's position regarding the essence of special knowledge, their content, forms and purposes of use.

The procedural law of Ukraine does not disclose the meaning of the term “special knowledge”, linking their use with the appointment of expertise or the involvement of a specialist. Let's begin start with considering the concept of “special knowledge”, from the philosophical interpretation of it. In philosophy, the term “knowledge”, is interpreted as “a special form of spiritual assimilation of the results of knowledge (the process of reproduction of reality), characterized by awareness of their truth,”, [1]understood as a collection of information from any industry acquired in the process of study, research, etc .; knowledge of reality in its individual manifestations and in general[2]. Knowledge is a system of perfectly reproduced in the language or sign form of the regular connections of the objective world, and various forms

[1] *Filosofskyi entsyklopedychnyi slovnyk / hol. red. V. I. Shynkaruk* (2002) [Philosophical Encyclopedia Dictionary, edited by Shinkaruk]. Kyiv : Abris, p. 228 [in Ukrainian].

[2] *Novyi tlumachnyi slovnyk ukrainskoi movy: u 4 t. / uklad. V. Yaremenko, O. Slipushko* (1999) [New Explanatory Dictionary of the Ukrainian Language: 4 vol. / compiler Yu. H. Korukhov]. Kyiv : Akonit. V. 2. P. 162 [in Ukrainian].

of knowledge are connected with the ways of human activity. It is accepted to allocate two types of knowledge — practical (everyday) and scientific. Practical knowledge is a generalization of the experience of production, political, medical, pedagogical and other forms of activity, contain certain recommendations and requirements. Under practical knowledge, knowledge, accumulated by people in everyday life and everyday production activities, are expressed in the so-called formulation rules[1]. The basis of scientific (theoretical) knowledge is research activity — the process of obtaining new knowledge on the basis of understanding the results of previous development[2]. Scientific knowledge is an extensive knowledge system. They become accessible to a person only as a result of cognitive activity at the level of theoretical thinking, which is based on the relevant (special) educational preparation. Obviously, practical and scientific knowledge is interdependent and interdependent.

V. D. Arsenyev and V. G. Zablotskyy, Z. M. Sokolovsky consider special knowledge as a totality, a system of information[3], T. D. Telegin specifies that it is "information of scientific and non-scientific character"[4], O. P. Hrishin treats special knowledge as a complex of various information[5]. Special knowledge by V. Yu. Shepitko is a system of scientific data (information) or objective skills[6]. We join the mindset of these scholars, since the definition of special knowledge as a collection of systematized information or information from various spheres of human activity seems more accurate and corresponds to the philosophical and epistemological interpretation of this concept.

Special is defined in the dictionary as "intended exclusively for someone, something that has a special purpose belongs to a separate branch of something

[1] Nadhornyi H. M. (1980) *Gnoseologicheskie aspekty ponjatija «special'nye znanija». Kriminalistika i sudebnaja jekspertiza* [Epistemological aspects of the concept of "special knowledge". Forensic Science and Criminalistics]. Kyev : Vyshcha Shkola, Issue 21. P. 39 [in Russian].

[2] *Filosofiia: uchebnik / pod red. O. Mitro*shenkova (2002) [Philosophy: manual / edited by O. Mytroshenkov]. Moscow : Gardariki, p. 259 [in Russian].

[3] Arsenyev V. D. Zablotsky V. G. (1986) *Ispol'zovanie special'nyh znanij pri ustanovlenii fakticheskih obstojatel'stv ugolovnogo dela* [Use of special knowledge in determining the actual circumstances of a criminal case]. Krasnoyarsk : Krasnoyarsk State Yuniversity, p. 4; Sokolovskyi Z. M. (1969) *Ponjatie special'nyh znanij (k voprosu o naznachenii jekspertizy). Kriminalistika i sudebnaja jekspertiza* [Concept of special knowledge (on appointment of forensic examination). Forensic science and criminalistics]. Kyev : VSH MVD SSSR. 1969. Issue 6. P. 202 [in Russian].

[4] Telehyna T. D. (2011) *Ispol'zovanie special'nyh znanij v sovremennoj praktike rassledovanija prestuplenij: monografija*. [Use of special knowledge in current practice of crime investigation : monograph]. Moscow : Yurlitinform, p. 28 [in Russian].

[5] Hryshyna E. P. (2012) *Svedushhie lica v rossijskom ugolovnom sudoproizvodstve: teoreticheskie problemy dokazyvanija i pravoprimenitel'naja praktika: monografij* [Experts in Russian criminal proceedings: Theoretical Problems of Evidence and Law Enforcement Practices : monograph]. Moscow : Yurlitinform, p. 14 [in Russian].

[6] Shepitko V. Yu. (2014) *Problemy vykorystannia spetsialnykh znan kriz pryzmu suchasnoho kryminalnoho sudochynstva v Ukraini. Sudova ekspertyza* [Problems of using special knowledge through the prism of modern criminal justice in Ukraine. Forensic Science]. № 1. P. 11 [in Ukrainian].

that is specific to one or another specialty"[1]. *The notion of "special knowledge", should be considered in the broadest sense as knowledge in any field of human activity.* In such an interpretation, legal (legal) knowledge, of course, is special, is acquired through teaching and is required to be owned by professional participants in legal proceedings, who carry out evidence and litigation. However, in epistemology, the theory of knowledge of phrases "special knowledge", "special scientific knowledge", does not exist. *As A. V. Volobuev* correctly notes, in the criminal procedure law the term "special knowledge", is used in contrast to compulsory legal knowledge, which should be owned by professional lawyers[2]. Therefore, the notion of "special knowledge", *in narrow sense is used* only *in the field of legal proceedings* and belongs to the thesaurus of the legal field.

Consequently, the content of special knowledge is a system of information (information) from various fields of scientific or practical activity, except for the law used in the legal proceedings. *Let's discuss the signs by which scientists give special knowledge.*

One of the first lawyers who defined the special knowledge was O. A. Eysman, who pointed out that they are not well-known and publicly available. These attributes are also pointed out by modern authors[3]. Well known scientist O. R. Rossynska emphasizes that the ratio of special and well-known knowledge by its nature is variable, depending on the degree of development of society and the level of integration of scientific knowledge in everyday life of person[4]. According to T. V. Sakhnova, the definition of special knowledge is of an evaluative nature and, therefore, by its nature depends on the level of development of social relations and adaptation of scientific knowledge in the life experience of man[5]. The second criterion is "not public availability", of knowledge also loses its significance, since in today's global information society, the presence of the World Wide Web, you can get any information from various fields of science, technology, society, etc. Therefore, the criteria for "not general", or "not public", cannot be a sign of special knowledge.

[1] *Slovnyk ukrainskoi movy: u 11 t.* (1978) [Dictionary of the Ukrainian language: 11 vol.]. Kyiv : Scientific idea, V. 9. P. 501–502 [in Ukrainian].

[2] Volobuiev A. F. (2000) *Problemy metodyky rozsliduvannia rozkradan maina v sferi pidpryiemnytstva: monohrafiia* [Problems of the method of investigation of property theft in the sphere of entrepreneurship : monograph]. Kharkiv : University of Internal Affairs, p. 236 [in Ukrainian].

[3] *Ekspertyzy u sudochynstvi Ukrainy: posibnyk / za zah. red. V. H. Honcharenka, I. V. Hory* (2015) [Forensic examinations for legal proceedings in Ukraine : textbook / edited by V. H. Honcharenko, I. V. Horra]. Kyiv : Kyiv : Yurinkom Inter, p. 11 [in Ukrainian].

[4] Rossinskaya E. R. (2001) *Special'nye poznanija i sovremennye problemy ih ispol'zovanija v sudoproizvodstve. Zhurnal rossijskogo prava* [Special knowledge and modern problems of their use in the proceedings. Journal of Russian Law]. № 5. P. 40 [in Russian].

[5] Sakhnova T. V. (2000) *Sudebnaja jekspertiza* [Forensic science]. Moscow : Grodets, p. 9 [in Russian].

Often, special ones include a set of knowledge in a particular field of science, technology, art, crafts[1]. The exhaustive list of the four branches of specialist knowledge actually reproduces the provisions of Articles 112 and 325 of the Statute of Criminal Proceedings of 1864.[2] This interpretation of special knowledge is given in definitions by many modern scholars[3]. Domestic legislator limited the list of specific branches of special knowledge to scientific and technical knowledge and pointed to "other special knowledge" (Article 69 of the CPC of Ukraine). In our opinion, currently not relevant are formulated in the nineteenth century. specialist knowledge fields used in all types of legal proceedings. At the present stage, taking into account that, firstly, crimes are committed in almost all spheres of human activity, using a variety of new technologies, and secondly, in the process of establishing the circumstances of the offense, knowledge can be used from any branch, from the given the interpretation of special knowledge by transferring them should be discarded, since it is impossible to give an exhaustive list of such types of knowledge. In addition, you should pay attention to the lack of logic in the list. For example, it is difficult to remove knowledge in art (knowledge of the artist, etc.), from knowledge in art criticism as a science and knowledge in artistic crafts as a type of crafts.

According to the law, an expert is prohibited from solving legal issues (Article 242 of the CPC of Ukraine, Article 102 of the Civil Procedural Code of Ukraine, Article 98 of the Commercial and Procedural Code of Ukraine, Article 101 of the Code of Administrative Proceedings of Ukraine of Ukraine), and therefore we can conclude that the lawmaker does not include legal knowledge in the circle of special. However, in recent years, the thesis of opposing legal and special knowledge in the legal process undergoes a significant audit. An analysis of the existing opinions of scholars allows to distinguish the following basic approaches to the correlation of legal knowledge with special in criminal proceedings. Special knowledge, except

[1] Kohutych I. I. (2015) *Okremi pytannia sutnosti ta form vykorystannia spetsialnykh znan u kryminalnomu provadzhenni. Visnyk akademii advokatury Ukrainy* [Specific issues of essence and forms of using special knowledge in criminal proceedings. Bulletin of the Academy of Advocacy of Ukraine]. V. 12/2 (33). P. 114 [in Ukrainian].

[2] *Ustav ugolovnogo sudoproizvodstva 1864 g.* [The Statute of the Criminal Proceedings, 1864]. URL: http://constitution.garant.ru/ history/act1600–1918/3137 (Date accessed: 09.04.2018) [in Ukrainian].

[3] *Kryminalnyi protsesualnyi kodeks Ukrainy: nauk.-prakt. komentar / za zah. red. V. H. Honcharenko, V. T. Nora, M. Ye. Shumyla* (2012) [Criminal Procedure Code of Ukraine: scientific comment / edited by Honcharenko, V. T. Nora, M. Ye. Shumyla]. Kyiv : Yustinian, p. 202, 539; *Kriminal'nij procesual'nij kodeks Ukraïni: nauk.-prakt. komentar / vidp. red. S. V. Kivalov, S. M. Mishhenko, V. Ju. Zaharchenko* (2013) [Criminal Procedure Code of Ukraine: Scientific comment / edited by S. V. Kivalov, S. M. Mishchenko, V. Yu. Zakharchenko]. Kharkiv : Odissei, p. 592.Yurchyshyn V. D. (2006) *Vysnovok eksperta yak dzherelo dokaziv u kryminalnomu protsesi Ukrainy: avtoref. dys. … kand. yuryd. nauk*. [The expert's conclusion as a source of evidence in the criminal process of Ukraine : extended abstract of ... Cadidate thesis]. 12.00.09. Kyiv, p. 8 etc.

for non-legal ones, include: forensic knowledge[1]; legal, in addition to professional knowledge of the subjects who carry out criminal proceedings[2]; legal knowledge, in addition to criminal proceedings and criminal law[3]; legal knowledge, except material and procedural law[4]; all legal knowledge[5]. We share the opinion of those scholars who consider special knowledge exclusively as unlawful[6]. Another position opens the door to the involvement of lawyers who are able to replace professional participants in the process, and the conduct of legal expertise, which is explicitly prohibited by law. On this occasion, it is necessary to point out the obvious mistake of the legislator, who entered into the civil, economic and administrative processes of such a new participant as an "expert on questions of law" (Article 73 of the Civil Code of Ukraine, Article 70 of the Code of Civil Procedure of Ukraine, Article 68 of the CAC of Ukraine)[7]. Apart from the fact that the appearance of this

[1] Nadhornyi H. M. (1984) *Sootnoshenie special'nyh i juridicheskih znanij. Kriminalistika i sudebnaja jekspertiza.* [Ratio of special and legal knowledge. Forensic science and criminalistics]. Kyiv : Vyshcha Shkola, Issue 28. P. 18; Klymenko N. I. (1988) *Oshibki pri ispol'zovanii special'nyh znanij v dosudebnyh stadijah ugolovnogo processa. Problemy dal'nejshego ukreplenija socialisticheskoj zakonnosti pri rassledovanii prestuplenij organami vnutrennih del : sb. nauchn. tr.* [Errors in use of special knowledge in the pretrial stages of criminal proceedings. Problems of further strengthening of socialist legality in the investigation of crimes by internal affairs bodies: Collection of scientific papers]. Kyiv : Kiev State Yuniversity, p. 127 [in Ukrainian].

[2] Bondarenko O. O. (2004) *Protsesualnyi status obiznanykh osib ta yikh pravovidnosyny z diznavachem i slidchym u kryminalnomu sudochynstvi Ukrainy: dys. ... kand. yuryd. nauk* [Expert procedural status of and their legal relationship with investigator in the criminal justice system of Ukraine : Candidate of science dissertation]: 12.00.09. Kharkiv, p. 16. Revaka V. M. (2006) *Formy vykorystannia spetsialnykh piznan v dosudovomu provadzhenni: dys. … kand. yuryd. nauk* [Forms of use of special knowledge in pre-trial proceedings : Candidate of science dissertation]: 12.00.09. Kharkiv, p. 177 [in Ukrainian].

[3] Stepaniuk R. L. Lapta S. P. (2013) *Spivvidnoshennia pravovykh i spetsialnykh znan u kryminalnomu provadzhenni. Visnyk Kharkiv. nats. un-tu im. V. N. Karazina. Seriia: Pravo* [Ratio of legal and special knowledge in criminal proceedings. Bulletin of V. N. Karazin Kharkiv National University Series: Pravo]. Kharkiv. Issue № 16 (1082). P. 198 [in Ukrainian].

[4] *Navchalno-metodychnyi posibnyk dlia samostiinoi roboty ta praktychnykh zaniat i slovnyk terminiv z navchalnoi dystsypliny «Kryminalistyka»* [Educational and methodical manual for independent work and practical classes and a dictionary of terms from the educational discipline: Criminalistics], p. 148 [in Ukrainian].

[5] Exarchopulo A. A. (2001) *Special'nye poznanija v ugolovnom processe i ih netradicionnye formy. Vestnik kriminalistiki* [Special knowledge in the criminal process and their unconventional forms. Bulletin of criminalistics]. Moscow : Spark, Issue 2. P. 26–27. Rossinskaya E. R. (2006) *Special'nye juridicheskie znanija i sudebno-normativnye jekspertizy. Trudy VJuZI–MJuI–MGJuA* [Special legal knowledge and forensic examinations. MSAL publications]. Moscow : MSAL, V. 2. P. 70. Lazareva L. V. (2009) *Special'nye znanija i ih primenenie v dokazyvanii po ugolovnomu delu* [Special knowledge and their application in evidence in a criminal case]. Moscow : Yurlitinform, p. 22 [in Ukrainian].

[6] *Kryminalnyi protsesualnyi kodeks Ukrainy: nauk.-prakt. komentar / za zah. red. V. H. Honcharenko, V. T. Nora, M. Ye. Shumyla* (2012) [Criminal Procedure Code of Ukraine: Scientific comment / edited by Honcharenko, V. T. Nora, M. Ye. Shumyla]. Kyiv : Yustinian, p. 539 [in Ukrainian].

[7] *Pro vnesennia zmin do Hospodarskoho protsesualnoho kodeksu Ukrainy, Tsyvilnoho protsesualnoho kodeksu Ukrainy, Kodeksu administratyvnoho sudochynstva Ukrainy ta inshykh zakonodavchykh aktiv : Zakon Ukrainy* [On Amendments to the Economic Procedural Code of Ukraine, the Civil Procedure Code of Ukraine, the Code of Administrative Judicial Proceedings of

person makes confusion in the procedural laws that prohibit the expert way to resolve issues of law, the conclusion of such an expert does not have the power of a source of evidence, but is of a consultative nature. Therefore, it is more correct to call such an expert "law consultant".

With the advent and development of the science of forensic expertise — forensic experts, the question arises naturally about its relationship with the expert knowledge of the expert. Forensic expedition, in our opinion, consists of a general theory of expertise and methodological foundations of various forensic expert branches that are used to develop expert methods and techniques for studying various objects in order to solve typical problems. It seems that special knowledge includes methods and techniques that constitute the arsenal of a special part of forensic expert analysis, which experts use in the process of research and solving the issues[1].

In determining the special knowledge traditionally in their structure include skills and abilities[2]. This provision is a reminder. In psychology, a skill is understood as a way of performing an action that as a result of prolonged exercises is automated[3]. Skill is characterized by a decrease or lack of conscious control and regulation. Ability is the ability to perform any action, operation, solve a problem. Ability is called and realized attempt of activity, and high professional skill. Ability, in contrast to skills, is formed as a result of the coordination of skills, their integration into the system through actions that are under conscious control. Skills and skills are interrelated and interdependent. Skills in contrast to skills always rely on active intellectual activity and necessarily include the processes of thinking[4]. On the other hand, skills are always the application of knowledge, that is, it is not enough just to know something about the subject, you must master a range of actions and operations in order to apply this knowledge. Consequently, the ability is a purposeful operation of the object based on knowledge of it. In this sense,

Ukraine and other legislative acts : Law of Ukraine] dated on 03.10.2017 № 2147–VIII. Bulletin of Verkhovna Rada 2017. № 48. Art: 436 [in Ukrainian].

[1] Sherbakovskyi M. H. (2018) *Sudebnaia ekspertolohyia y spetsyalnje znanyia eksperta. Teoriia i praktyka sudovoi ekspertyzy i kryminalistyky: mater. Vseukr. nauk.-prakt. konf. z nahody 85-richchia dokt. yuryd. nauk, prof. N. I. Klymenko* [Forensic expertise and specialist knowledge of an expert. Theory and Practice of Forensic Science and Criminalistics Content of All Ukrainian Academic Conference on the occasion of the 85th anniversary of Professor N. I. Klymenko]. Kyiv, 27 February 2018. Kyiv-Mariupol, p. 402–403 [in Russian].

[2] Melnykova Ye. B. (1964) *Uchastie specialistov v sledstvennyh dejstvijah* [Involvement of experts in investigative actions]. Moscow : Yurid. lit., p. 54. Kuzmichov V.S. Pyrih I. V. (2008) *Vykorystannia spetsialnykh znan pry rozsliduvanni rozkradan vantazhiv na zaliznychnomu transporti: monohrafiia* [Use of special knowledge in the investigation of cargo stolen by rail : monograph]. Dnipropetrovsk: Lira, p. 14. Bidniak H. S. (2018) *Vykorystannia spetsialnykh znan pry rozsliduvanni shakhraistv: dys. … kand. yuryd. nauk* [Use of special knowledge in the investigation of fraud : Candidate of science dissertation]: 12.00.09. Dnipro, p. 79 [in Ukrainian].

[3] Rubinshtein S. L. (2000) *Osnovy obshhej psihologii* [The essentials of general psychology]. SPb. : Piter, p. 82 [in Russian].

[4] Varii M. I. (2007) *Zahalna psykholohiia : pidruchnyk* [General psychology : textbook]. Kyiv : Center sci.lit., p. 689 [in Ukrainian].

skill-based action becomes automatic. Knowledge, skills and abilities are inseparable and functionally related, but different parts of any purposeful activity. Skills and skills characterize the ability of a person to apply the knowledge that he possesses. On the basis of the above, we believe that the inclusion in the concept of "special knowledge", skills and abilities is superfluous and does not correspond to the positions adopted in pedagogy and psychology. In addition, we note that in the case of a specialist, the law clearly distinguishes between the presence of knowledge and skills of a knowledgeable person (Article 71 of the Criminal Procedure Code of Ukraine, Article 74 of the Civil Code of Ukraine, Article 71 of the Code of Civil Procedure of Ukraine, Article 70 of the CAC of Ukraine).

A certain feature of special knowledge is the way of their mastery by a knowledgeable person. All researchers agree that special knowledge is obtained through learning or long-term practice in any field. Theoretical training and practical activity are processes of reflection and reproduction in human thinking of objective reality, accumulation of experience, acquisition of skills, acquisition of skills and knowledge as products of social, labor and intellectual activity. Special knowledge is acquired through formal, informal and informal (self) education. Formal education is realized by assimilation of educational programs of study in institutions of professional (vocational), specialist pre-primary and higher education[1]. Obtaining formal education is confirmed by the relevant document.

The question remains about the forms of use of special knowledge. V. K. Lisichenko and V. V. Tsirkal strongly object to the non-procedural form of the use of special knowledge in criminal proceedings[2]. Most scholars and practitioners consider it possible and necessary to use special knowledge both in procedural and non-procedural forms[3]. In the legal procedure, non-procedural forms of using special knowledge are widely used to obtain various kinds of information: forensic examinations, preliminary studies of objects at the place of their detection, consultations of individuals or legal entities, etc. Regulation of the procedural law of the use of special knowledge depends on the involvement of participants in the process of the subject (knowledgeable person). It should be noted that in procedural laws it is

[1] *Pro osvitu : Zakon Ukrainy* [About education : Law of Ukraine] dated on 5.09.2017 № 2145–VIII. Bulletin of Verkhovna Rada of Ukraine 2017. № 38–39. Art: 380 [in Ukrainian].

[2] Lysychenko V. K. Tsyrkal V. V. (1987) *Ispol'zovanie special'nyh znanij v sledstvennoj i sudebnoj praktike : posobie* [Use of special knowledge in investigative and judicial practice : textbook]. Kyiv : Kiev State Yuniversity, p. 48 [in Russian].

[3] Goncharenko V. I. (1980) *Ispol'zovanie dannyh estestvennyh i tehnicheskih nauk v ugolovnom sudoproizvodstve* [Use of data of natural and technical sciences in criminal proceedings: methodological issues]. Kyiv : Vyshcha Shkola, p. 109; Revaka V. M. Papers mentioned above, p. 49; *Kryminalistyka / za zah. red. A. F. Volobuieva, R. L. Stepaniuka, V. O. Maliarovoi: pidruchnyk: u 2 t.* (2017) [Criminalistics / edited by A. F. Volobuiev, R. L. Stepaniuk, V. O. Maliarova : textbook. 2 vol.]. Kharkiv : Kharkiv National University of Internal Affairs. V. 1. P. 48–49 [in Ukrainian].

possible to identify well-known persons whose legal personality and participation are clearly regulated and those whose results of work are used, but the rights, responsibilities, responsibilities, procedure of activity are not clearly defined. For example, in civil proceedings, the continuation of forced outpatient psychiatric care, forced hospitalization and its extension (Article 340 of the Civil Procedure Code of Ukraine), and in criminal proceedings, the continuation, change or termination of the use of compulsory measures of a medical nature (*Article 514 of the CPC of Ukraine)* is carried out on the basis of the conclusion of the commission psychiatrists. The conclusion justifies the procedural decision of the court, however, unlike the forensic expert psychiatrists, the legal personality of the said specialists is not defined by law.

The goals of using special knowledge in legal proceedings are determined by lawyers in different ways, but they are similar in content: comprehensive, complete and objective clarification of the circumstances that are included in the subject of evidence, or the collection and research of evidence[1]. With these statements can only be accepted in part. Truly proven information includes information about the circumstances to be proved and included in the subject of proof. However, interpretation of the purpose of special knowledge solely by obtaining evidence significantly narrows the scope of their use. In addition to proving with the help of special knowledge, guiding information is obtained[2]. Thus, the specialist provides recommendations to the parties and the court regarding the type of traces, the direction of their search or establishment of the subject of the crime; a psychologist can create a psychological portrait of the offender and so on. Oriented information obtained through special knowledge is used for organizational and tactical purposes in the legal process for: promotion of versions, definition of directions of investigation, planning of procedural actions, forecasting of a possible line of behavior of participants in the process, etc. Hence, the purpose of using special knowledge is to obtain data that serves as the basis for the adoption of reasonable procedural or organizational (tactical) decisions. In addition, special knowledge, in particular

[1] Kovalenko V. V. (2007) *Zastosuvannia naukovo-tekhnichnykh zasobiv spetsialistamy pry provedenni slidchykh dii: monohrafiia* [Application of scientific and technical means by specialists during conducting investigative actions : monograph]. Luhansk RVV LDPEU, p. 60. *Kryminalnyi protsesualnyi kodeks Ukrainy: nauk.-prakt. komentar / za zah. red. V. H. Honcharenko, V. T. Nora, M. Ye. Shumyla* (2012) [Criminal Procedure Code of Ukraine: Scientific comment / edited by Honcharenko, V. T. Nora, M. Ye. Shumyla]. Kyiv : Yustinian, p. 202; *Kryminalnyi protses : pidruchnyk / za red. V. Ya. Tatsiia, Yu. M. Hroshevoho, O. V. Kaplinoi, O. H. Shylo* (2013) [Criminal procedure: manual / edited by V. Ya. Tatsii, Yu. M. Hroshevoho, O. V. Kaplina, O. H. Shylo]. Kharkiv : Pravo, p. 155 [in Ukrainian].

[2] Shcherbakovskyi M. H. Kravchenko A. A. (1999) *Primenenie special'nyh znanij pri raskrytii i rassledovanii prestuplenij: posobie* [Application of special knowledge in the disclosure and investigation of crimes : textbook]. Kharkov : Yuniversity of Internal Affairs, p. 9; Sadchykova K. A. (2017) *Vykorystannia spetsialnykh znan na stadii dosudovoho rozsliduvannia (protsesualnyi aspekt): dys. … kand. yuryd. nauk* [Use of special knowledge at the stage of pre-trial investigation (procedural aspect) : Candidate of science dissertation]: 12.00.09. Odessa, p. 37 [in Ukrainian].

the expert's conclusion in criminal proceedings, is used in criminal law; criminal procedure; Forensic and Criminalistics Directions[1].

Summarizing the above, one can give the following definition: *special knowledge* is systematized information from various fields of theoretical and practical activity, except for the right acquired as a result of professional or independent training and experience in a particular specialty, are used on the basis of skills in procedural or non-procedural forms of the purpose of collection (formation), research, verification of evidence, establishment of grounds for the adoption by authorized persons of procedural, organizational and tactical decisions in legal proceedings. The exact content, form and purpose of the implementation of special knowledge depends on the functions of the particular participant in the judicial process that uses them.

СУТНІСТЬ, СТРУКТУРА ТА ЦІЛІ ВИКОРИСТАННЯ СПЕЦІАЛЬНИХ ЗНАНЬ У СУДОЧИНСТВІ

М. Г. Щербаковский

Розглянуто характеристики спеціальних знань. Показано, що знання є відомостями з різних галузей діяльності, крім права, спеціальними іменуються тільки в судочинстві, набуваються в процесі навчання й практичного досвіду, використовуються на основі умінь і навичок у процесуальній і непроцессуальній формах із метою отримання доказової та орієнтуючої інформації.

Ключові слова: спеціальні знання, судочинство, правові знання, форми й цілі використання спеціальних знань.

СУЩНОСТЬ, СТРУКТУРА И ЦЕЛИ ИСПОЛЬЗОВАНИЯ СПЕЦИАЛЬНЫХ ЗНАНИЙ В СУДОПРОИЗВОДСТВЕ

М. Г. Щербаковский

Раскрыто содержание и свойства процессуального понятия «специальные знания». Показано, что специальные знания включают совокупность систематизированных сведений или информации из различных сфер человеческой деятельности. Предложено отказаться от перечисления конкретных видов знаний (наука, техника, искусство, ремесло), которые в Криминальном процессуальном кодексе включены в понятие «специальные знания». Отмечены проблемные аспекты практической деятельности, которые возникают в связи с постановкой и решением экспертом вопросов правового характера. Автор, как и другие правоведы, считает, что только профессиональные участники судопроизводства (судья, следователь, прокурор, адвокат) решают правовые вопросы на основе своих юридических знаний. Поэтому в судопроизводстве знания из области права не могут относиться к специальным знаниям. На основе анализа литературных данных автор приходит к мнению, что наука о судебной экспертизе состоит из двух частей: общей теории судебных экспертиз и методологических основ различных видов экспертиз. Методы и методики, которые используются в процессе экспертных исследований и решении поставленных задач, относятся к

[1] Sherbakovskyi M. H. (2015) *Provedennia ta vykorystannia sudovykh ekspertyz u kryminalnomu provadzheni: monohrafiia* [Performing and using forensic examinations in criminal proceedings : monograph]. Kharkiv : V dele, p. 422–448 [in Ukrainian].

специальным знаниям судебного эксперта. Исходя из принятых в педагогике и психологии положений, доказано, что умения и навыки сведущего лица не входят в состав специальных знаний. Специальные знания используются в судопроизводстве на основе умений и навыков участников процесса. Специальные знания приобретаются путем формального или неформального (самостоятельного) образования сведущего лица. В судопроизводстве широко используются процессуальные, которые регламентированы в кодексах, и непроцессуальные формы специальных знаний. Целью применения специальных знаний является получение доказательственной или ориентирующей информации о правонарушении. Доказательственная информация является содержанием доказательств, а ориентирующая информация необходима для принятия процессуальных, организационных или тактических решений следователем, прокурором, защитником и судьей.

Ключевые слова: специальные знания, судопроизводство, правовые знания, формы и цели использования специальных знаний.

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ABOUT FORENSIC EXPERT PARTICIPATION IN CASES REGARDING ADMINISTRATIVE OFFENSES

Peculiarities of participation of forensic expert at certain stages of proceedings during the consideration of cases on administrative violations are highlighted. The issue of attracting a forensic expert, taking a decision on the appointment of an expert examination, preparation of the examination conclusion and evaluation by the body that appointed the examination is considered.

Keywords: forensic expert, proceedings on administrative offences, stages of proceedings, expert involvement, examination conclusion.

Implementation of administrative proceedings in cases of administrative violations among other participants should be distinguished by a forensic expert who takes a special place in this process. It can be argued that a judicial expert performs procedural functions of auxiliary character, which facilitate the consideration of a case and allow it to be dealt with in substance. That is why the forensic expert plays a protective role at various stages of administrative proceedings in administrative offenses and acquires legal status in this process.

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Characteristics of the legal status of an expert in the proceedings on administrative violations includes the definition of the peculiarities of the stage of involvement of an expert in the proceedings. This provides an opportunity to outline the most significant stages of the expert's work in cases of administrative offenses. It should be borne in mind that at various stages of administrative proceedings an expert performs one function — conducting expert research. It is the expert research to be understood as the process of identifying, fixing, correlating, explaining and evaluating the features, properties and qualities of objects of expertise with the use of expert knowledge to obtain certain conclusions on this basis[1].

In defining the concept of "proceedings in administrative offenses", by scientists, the diversity of its content was distinguished, namely, two approaches to the definition:

— is the activity of state bodies regulated by administrative-procedural rules, aimed at the consideration of cases of administrative offenses and the application of administrative penalties in cases of necessity;

— this is a collection carried out by competent entities on the basis of procedural norms of action for the resolution of cases of administrative offenses.

It should be noted immediately that there are divergences, but they cannot be considered significant. Proceedings in cases of administrative offense consist of stages that have a procedurally defined sequence. In administrative-legal science there is a unity of scientists' opinions regarding the stage of proceedings in cases of administrative offenses. So, O. M. Bandurka and M. M Tyshchenko distinguish four stages:

— infringement of an administrative offense case (administrative investigation);

— consideration of the case and the passing of the ruling therein;

— appeal and appeal against the ruling in the case (review of the ruling);

— execution of the resolution[2].

Judicial expert is a participant in proceedings on administrative offenses, however, his participation in such proceedings has not been widely reflected in the writings of administrative scholars. Fragmentarily highlights the issue of involving an expert in proceedings on cases of violation of customs rules, when it is expedient to use special knowledge on this category of cases at the stage of consideration of the case on violation of customs rules. In some cases,

[1] Lukianets D. M. (2006) *Administratyvno-deliktni vidnosyny v Ukraini: teoriia ta praktyka pravovoho rehuliuvannia: monohrafiia* [Administrative and delict relations in Ukraine: theory and practice of legal regulation : monograph]. Sumy: Universytetska knyha, p. 367 [in Ukrainian].

[2] Bandurka O. M. Tyshchenko M. M. (2003) *Administratyvnyi protses : pidruchnyk dlia vyshch. navch. zakl.* [Administrative procedure: Manual for Higher Schools]. Kyiv : Litera, LTD, p. 336 [in Ukrainian].

taking into account the specific circumstances of the case, the possibility of participation of an expert at the stage of infringement proceedings on the violation of customs rules is not ruled out, in checking the content of the protocol by a higher official of the customs authority. It is also possible for the expert to participate in the consideration of a complaint against a ruling on a violation of customs rules[1].

Administrative-jurisdictional proceeding begins with the identification of the fact of commission of an administrative offense, the reasons and circumstances of its commission are found out, the guilty persons are found, the harm done, its fixation in the relevant procedural document: the minutes of the administrative offense, the act or order (regarding the legal entities — objects of management). T. O. Kolomoets and I. O. Skvirsky distributed the first stage of the proceedings to the stages: procedural processing of results with transfer to court (administrative investigation)[2].

In clause 1 of Art. 273 KUpAP states that the expert is appointed by the body (official), in whose proceedings there is an administrative offense, in the case when there is a need for the use of special knowledge[3]. In Art. 1 of the Law of Ukraine *On Judicial Examination* states that forensic science is a study based on special knowledge in the field of science, technology, art, crafts, etc. objects, phenomena and processes in order to provide an opinion on matters that are or will be the subject of judicial consideration[4]. Point 1.3 of the Instructions on the appointment and conducting of forensic examinations and expert studies is regulated that: in accordance with the current legislation on behalf of law enforcement agencies (including for the resolution of the issue of administrative or criminal proceedings), officials of the State Tax Administration of Ukraine, the State Customs Service of Ukraine, The State Bailiffs' Service, at the request of lawyers, defenders and persons who independently protect their interests, and their representatives, notaries, bank establishments, Insurance companies and other businesses and individuals can be carried out expert studies that require special knowledge and use methods of criminalistics and forensics science[5].

[1] Dusyk A. V. (2002) *Pravovyi status eksperta u provadzhenni po spravakh pro porushennia mytnykh pravyl. Mytna sprava* [Legal status of an expert in proceedings on violations of customs rules. Customs business]. № 1. P. 27–35 [in Ukrainian].

[2] Kolomoiets T. O. Skvirskyi I. O. (2008) *Vypravni roboty za zakonodavstvom Ukrainy: teoriia, dosvid ta praktyka zastosuvannia: monohrafiia* [Corrective work on the legislation of Ukraine: theory, experience and application practice : monograph]. Kyiv : Istyna, p. 101 [in Ukrainian].

[3] *Kodeks Ukrainy pro administratyvni pravoporushennia (zi zminamy ta dopov.). Vidom. Verkhov. Rady Ukrainskoi PCP* (1984) [Code of Ukraine on Administrative Offenses (with amendments and additions). Bulletin of Verkhovna Rada of Ukrainian Soviet Socialist Republic]. № 51. Art: 1122 [in Ukrainian].

[4] *Pro sudovu ekspertyzu : Zakon Ukrainy* [On Judicial Examination : Law of Ukraine] dated on: 25.02.1994 № 4038–XII. Bulletin of Verkhovna Rada of Ukraine 1994. № 28. Art: 232.

[5] *Pro zatverdzhennia Instruktsii pro pryznachennia ta provedennia sudovykh ekspertyz ta Naukovo-metodychnykh reko-mendatsii z pytan pidhotovky ta pryznachennia sudovykh ekspertyz ta ekspertnykh doslidzhen: nakaz M-va yustytsii Ukrainy vid 08 zhovt. 1998 r. № 53/5. Ofits visnyk*

When analyzing the outlined provisions of the law, it should be noted that there is a contradiction between the KUpAP, the Law of Ukraine *On Judicial Examination* and the Instruction on the time of admission of a judicial expert to proceedings in cases of administrative offenses. Under the current KUpAP, the Law of Ukraine *On Judicial Examination*, as well as in other procedural acts of Ukraine, — an expert is involved in the case, if necessary, at the second, central stage of proceedings in cases of administrative violations in the preparation of the case for consideration, by the decision of the authorized body, in the course of which it is located. The instruction, in turn, allows the involvement of a judicial expert in the first stage of proceedings in administrative offenses cases in order to resolve the issue of administrative proceedings in general.

In view of this, the person who is being brought to administrative responsibility at the moment of instituting the case, finding out the causes and circumstances of the commission of the offense, processing the investigation results and sending the materials for consideration of the case under jurisdiction, are in fact deprived of the right to examine certain evidence materials by an expert at the first stage of proceedings in an administrative offense case. These restrictions need to be eliminated by amending the legislation on granting permission for appointment and conducting an examination before a violation of the proceedings on an administrative offense. The changes made, on the one hand, will provide the expert with the opportunity to exercise his procedural rights at the first stage of proceedings in cases of administrative offenses. On the other hand, the amended legislation will contribute to a comprehensive, complete and objective study of the circumstances of the case, the adoption of legitimate and substantiated decisions.

The second central stage of the proceedings — the consideration of the case on an administrative offense and the adoption of a resolution therein — was recognized by the scholars as the main one in the said proceeding. It is at this stage that the most important tasks of the implementation are realized, in other words, the deed is actually dealt with. The participation of an expert in proceedings on administrative offenses at this stage is maximal. The regulation of the expert's activity at this stage of the proceedings in cases of administrative violations found its normative consolidation in KUpAP. It is the Code that regulates a number of procedural actions, which it includes: preparing a case for consideration, hearing a case, making a decision in a case and bringing it to the attention of the participants.

Ukrainy (1998) [On approval of the Instruction on the appointment and conducting of forensic examinations and expert studies and scientific and methodological recommendations on the preparation and appointment of forensic examinations and expert studies: Order of the Ministry of Ukraine dated on 08, October 1998, № 53/5. Official Bulletin of Ukraine]. № 46 [in Ukrainian].

When executing the procedural action — preparation of the case for consideration — the body considering the case on an administrative offense thoroughly examines all the circumstances of the case, hears the explanation of the person against whom administrative proceedings are instituted, victims, legal representatives, as well as, if necessary, the use of special expert knowledge. Thus, it is precisely at this stage that a body authorized to consider a case concerning an administrative offense, if necessary, uses special knowledge to appoint a judicial examination. In turn, the expert is given the opportunity to exercise their procedural rights and obligations and, as a result of expert studies, give a conclusion of the examination.

When making a decision on the appointment of an expert examination, the body conducting the administrative delicious proceedings already has the data that is likely to reliably, fully or partially confirm the affiliation of the materials sent to the expert for the study. Consequently, the necessity of appointment of an expert examination is to confirm or refute the circumstances contained in these materials.

In addition, at the stage of consideration of the case on an administrative offense and the adoption of the resolution therein, the issues that are related to:

— definition of the place of examination;

— identification of circumstances that prevent it carrying out;

— appointment of a specific expert.

By describing the legal status of a judicial expert in proceedings on administrative offenses, the researchers point out that the vast majority of expert examinations in this proceeding are conducted in state specialized forensic institutions. However, the involvement of experts from other institutions that are not judicial experts does not prevent the achievement of objective truth in the proceedings on administrative offenses. Yes, there is a tradition of involving customs authorities as forensic experts from their industry. This is most likely due to the conviction that these specialists possess the necessary special knowledge, which allow to correctly solve the issues that arise when considering cases of this category. Such an approach has the right to exist, it can be considered fully justified as the requirement to involve an expert only in the state specialized court-expert institution, neither in the Customs Code of Ukraine nor in the KUpAP is secured[1].

In order to eliminate such a procedural gap in the KUpAP in conducting cases on administrative offenses, it is necessary to legislatively establish the right of an authority (official) authorized to consider an administrative offense case, to decide on the appointment of forensic examination at its own discretion, guided by the interests of timely, comprehensive, complete and informal The objective

[1] Dusyk A. V. Papers mentioned above, p. 34.

consideration of all circumstances in an administrative offense case and the determination of the truth.

The decision on the appointment of an expert examination in cases on administrative violations in the jurisdictional activities is formalized, as a rule, in the form of resolutions of the authorized body (official), in whose proceedings is the case of an administrative offense. The issued resolution on the appointment of the examination contains three parts: introductory, descriptive and executive. In the introductory part it is indicated which body (official), appoints an examination, the place and time of passing the resolution. The descriptive part combines the circumstances of the case on an administrative offense and contains a brief file of the case, the factual and legal grounds for appointment of the examination. The operative part defines: who is entrusted with the conduct of the examination; a range of issues to be solved by an expert; list of materials provided for research.

When organizing a hearing, an authority in whose proceedings an administrative offense is being held may call a forensic expert who has conducted an examination not only for a written opinion on the questions raised, but also for oral explanations regarding the submitted expert opinion, which is considered by the procedural legislation as an independent means of proof.

As it follows from the analysis of the current KUpAP, unfortunately, it does not contain requirements regarding the form, content and structure of the expert's conclusion regarding the proceedings on administrative violations; therefore, judicial experts are forced to follow expert practice, which worked out a certain structure of the conclusion, as well as instructions of the Instruction on the appointment and conduct of forensic examinations[1], which is not a significant shortcoming, which needs its elimination, as the current CPC of Ukraine, the CAS Ukraine, the CPC of Ukraine contain the normative fixing of requirements to this procedural document[2]. The complexity of the structure of the expert's conclusion, as a procedural document, lies in the fact that it derives from the structure of a special expert study, since it reflects its features. The authority in whose proceedings the case is about an administrative offense, but it is not the bearer of special knowledge, it is necessary to evaluate the evidence contained in the expert's opinion, taking into account the circumstances of their special nature and the possible shortcomings of the conclusion. The correctness of the expert's conclusion is important for his proper assessment by the court. Therefore, the structure of

[1] On approval of the Instruction on the appointment and conducting of forensic examinations and expert studies and scientific and methodological recommendations on the preparation and appointment of forensic examinations and expert studies.

[2] Bychkova S. S. (2003) *Ekspertyza v tsyvilnomu protsesi: dys. ... kand. yuryd. naukdoslidzhen: nakaz M-va yustytsii Ukrainy vid 08 zhovt. 1998 r. № 53/5. Ofits visnyk Ukrainy* [Examination in the civil process : Candidate of science dissertation]: spec. 12.00.03. Kyev, p. 177 [in Ukrainian].

the expert's conclusion, taking into account the significance of this procedural document for the objective resolution of the case on an administrative offense, must be determined in the KUpAP, rather than in the by-law normative-legal act (namely, in the Instruction).

The expert's conclusion is an independent means of proof, which has its own peculiarities, which consists in the fact that the expert informs the court of the actual data established in the course of the conducted research on the basis of special knowledge. Parties and other persons involved in the case do not necessarily have special knowledge, they are not entitled to conduct research to establish evidence. An expert investigation is conducted by a judicial expert autonomously from an authority authorized to consider an administrative offense case, and then sets out its findings in its conclusion. The nature and content of these results depend on what characteristics, qualities or qualities have been identified by the expert, which methods have been used, how they conducted the research and formulated its results. That is why in the expert's opinion the expert's belief in the correctness, completeness, objectivity and reliability of the results obtained during his expert research is central to the expert's opinion.

In addition to this, unlike other types of evidence, in the process of proving the results of the study, set out in the expert's conclusion, differ in that they have more guarantees of certainty. This can be explained by such objective factors as:

— the lack of interest and independence of the expert;

— the objective and scientific nature of the information contained in the conclusion;

— reflection in the conclusion of the whole path of the formation of the described results;

— the opportunity to check the results of this examination with the appointment of a re-examination, etc.

However, the expert's conclusion, as a source of evidence, is equal among equals, has no advantage over other means of proof. The conclusion is also subject to investigation and verification by the court, and the actual data contained therein are judged by the general rules, since they are factual data about certain circumstances of objective reality. One can support the opinion expressed by S. P. Lapta that the expert is not a "scientific judge"[1], and his conclusion is always judged by the court, as well as any other evidence. In the expert's conclusion, it is necessary to distinguish between the content (conclusion based on the conducted research, establishment and

[1] Lapta S. P. (2006) *Pravovi ta naukovi osnovy vykorystannia sudovykh ekspertyz pry rozsliduvanni zlochyniv: dys. ... kand. yuryd. nauk: spets* [Legal and scientific basis for using forensic examinations in the investigation of crimes : Candidate of science dissertation]: spec. 12.00.09. Kharkiv, p. 49 [in Ukrainian].

professional assessment of the expert of the facts) and the form (conclusion as an act). Both components are equally important in determining the evidence of the evidence contained in the expert's opinion. If the expert opinion the court finds unreliable, not based on scientific research or not followed form, despite reasonable and objective conclusion, it will not recognize the possibility of conclusion of evidence and evidence that make its content, namely: the proof[1].

The stage of reviewing the case in connection with the appeal or protest decision is optional, in other words, optional, and it only takes place in the case of appeal or appeal against the ruling on the merits of the case. The right to appeal a ruling on an administrative offense is one of the most important guarantees of the protection of the rights of the person being brought to administrative liability. The role of a court expert at this stage of administrative proceedings, in principle, does not change compared with the previous stage. However, the appointment of additional or re-examination is more likely for this stage of proceedings in cases of administrative offenses. The appointment of such types of expertise may take place when a person who is prosecuted, her legal representatives, a defense counsel has grounds for doubts as to the competence of the expert or the reliability, completeness and validity of the expert examination made at the preliminary stage of the administrative proceedings or the discovered additional materials, which require an expert study.

Consequently, depending on the quality of the expert examination and its completeness at the stage of reviewing the case, the authority in whose proceedings the case on the administrative offense is being conducted may appoint an additional or re-examination. Additional expertise may be imposed in case of lack of clarity or incompleteness of the expert's opinion, when these gaps cannot be eliminated by questioning the expert in court. Additional expertise is entrusted to the same expert or experts.

A re-examination is appointed when there are doubts in the correctness of the expert's conclusion due to its lack of substantiation or the fact that it contradicts other materials of the case, as well as in the presence of a substantial violation of procedural rules that regulate the procedure for the appointment and conduct of the examination. In particular, violations that have led to the limitation of the rights of parties or other persons may be recognized as material. The decision on the appointment of a re-examination indicates circumstances that raise doubts as to the correctness of the preliminary conclusion of the expert. The carrying out of the said examination is entrusted only to another expert. The possibility of appointment of a repeated or additional examination in conducting proceedings in cases of

[1] Sakhnova T. V. (2000) *Sudebnaja jekspertiza* [Forensic science]. Moscow : Grodets, p. 368 [in Ukrainian].

administrative violations must be determined in the Code of Administrative Offenses and foresee their procedural regulation.

Stage of the imposition of an administrative penalty is final, the final stage of the proceedings on administrative violations, its essence lies in the practical implementation of administrative penalties designed offender ordinance. At this stage, the expert, as a participant in administrative proceedings in cases of administrative offenses, is not involved.

Thus, it should be noted that the participation of an expert in the conduct of cases on administrative offenses at the present stage is as fully as possible realized at the second central stage of the proceedings — consideration of the case on an administrative offense. At this stage, an order is made to appoint an examination. It is at this stage that the expert is involved in providing a conclusion (at the stage of preparation of the case for consideration) and provides a written opinion, which is analyzed and evaluated by the authorized body conducting proceedings in the case of an administrative offense (at the stage of its hearing).

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IMPROVING PROFESSIONAL TRAINING OF JUDICIAL EXPERT — IMPORTANT FACTOR FOR DEVELOPMENT OF EXPERT DIDACTICS

The issues of improving the professional training of a court expert are considered. The training of judicial experts is one of the most important means of providing expert justice in the state, since only a high-level specialist is able to provide an objective conclusion based on the use of special knowledge in any form of legal proceedings. That is why the creation of an effective model of communicative activity of a court expert plays an important role in the training of forensic experts. Of particular relevance is the profession of subjects of forensic expert activity. A professional model of subjects of forensic expert activity is proposed, which is an approximate scheme of the profession of court expert. This scheme should include the following components. This scheme should include the following components: content of work; professionally important qualities; knowledge, skills, abilities; working conditions; medical contraindications; circumstances

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preventing a person from performing a judicial expert's function; requirements for vocational training; related professions; range of positions; the possibility of performing an activity of work by an expert independently or as a part of a legal entity that is not a state specialized institution; demand for a profession in the labor market. The characteristics of these components of the professionogram are revealed.

Keywords: expert didactics, professionalism of subjects of forensic expert activity, professionogram, profession of forensic expert, scientific activity, special knowledge.

Training of judicial experts is one of the most important means of providing expert justice in the state, since only a high-level specialist is able to provide an objective conclusion based on the use of specialist knowledge in any form of legal proceedings. Consequently, the creation of an effective model of the communicative activity of a court expert plays an important role in the training of forensic experts. There are objective and subjective factors that influence the formation of an effective model of communicative activity. After all, the personal qualities of a court expert may, on the one hand, help to ensure its effective work, and, on the other hand, create obstacles to its implementation. To avoid the negative impact of the subject of forensic expert activity on the administration of justice, it is necessary to improve the system of expert didactics (science of education) by imposing special requirements on persons who may in the future hold positions of forensic experts and heads of different levels of research institutions of forensic examinations[1].

In addition to proper knowledge of specialist knowledge, preparing the future forensic experts is an important factor in developing the qualities and abilities (professional and moral and ethical) in them, the use of which will allow them to perform their procedural duties at a high professional level. Of course, we support those scholars who believe that when assessing the competence of an expert, the first question arises whether he has the appropriate higher education and professional experience in the field of science and technology[2].

State specialized research institutions of forensic examinations of the Ministry of Justice of Ukraine are characterized by a certain specificity in personnel selection. As these organizations have the status of research

[1] *Do pytannia kadrovoho zabezpechennia naukovo-doslidnykh ustanov sudovykh ekspertyz Ministerstva yustytsii Ukrainy: roz'iasnennia Ministerstva yustytsii Ukrainy vid 05.08.2013. Baza danykh «Zakonodavstvo Ukrainy».* [On the issue of personnel provision of research institutes of forensic examinations of the Ministry of Justice of Ukraine: explanations of the Ministry of Justice of Ukraine dated August 5, 2013. Database Legislation of Ukraine]. URL: http://zakon4.rada.gov.ua/laws/show/n0019323–13 (Date accessed: 30.05.2018) [in Ukrainian].

[2] Klymenko N. I. *Shchodo pytan pro kompetentsiiu sudovoho eksperta. Kryminalistychnyi visnyk* (2010) [As to the competence of the court expert. Kryminalistychnyi visnyk]. № 2. (14), p. 19–23 [in Ukrainian].

institutions, they also include scholars in addition to the positions of forensic experts (judicial expert, senior judicial expert, leading judicial expert, chief judicial expert). According to Art. 31 of the Law of Ukraine "n scientific and scientific and technical activities",[1] to scientific positions belong According to Art. 31 of the Law of Ukraine "On scientific and scientific-technical activity", to scientific positions include: the head (director); Deputy director (director) for scientific work; counselor at the direction of a scientific institution; academic secretary; Head (head) of the scientific division, scientific publishing house, editorial office of the scientific publication; Leading engineer in the main field of activity of a scientific institution, organization, institution; Leading editor of scientific publishing house, periodical scientific publication; Chief Scientist; leading researcher; Senior Research Fellow; Researcher; researcher-consultant; Junior Researcher. The researchers also include persons who have a degree and work in a specialty according to a group of specialties in the branches of sciences, according to which a degree has been awarded. In addition, it should be noted that it is precisely the foreseen qualification of the posts of employees of research institutes of forensic examinations of the Ministry of Justice of Ukraine established the rule that as scientific workers who have the qualifications of a judicial expert, on the instructions of the leadership NDUSE conducting forensic examinations (expert studies) with the use of scientific methods of forensic science and forensic examination, as well as forensic experts in accordance with the technical tasks, carry out scientific work on the creation of methodologies (methodological recommendations) conducting forensic examinations.[2]. In our opinion, such an approach is optimally correct, because it combines the theory and practice of forensic examination.

We fully share the opinion of V. M. Baranjak that the professionalization of scientific workers in the field of forensic expertise should mainly be based on the fundamental training of a future specialist in a higher educational institution, just as a forensic expert. This approach implies the need for postgraduate education, its base on basic training in higher education institutions. In particular, the training process for preparing forensic experts should be focused on the issuance of specialists in certain profiles (specialties), and the acquired knowledge of them should correspond to the

[1] *Pro naukovu i naukovo-tekhnichnu diialnist : Zakon Ukrainy* [About scientific and scientific and technical activities : Law of Ukraine] from 25.12.2015 № 922–VIII. Bulletin of Verkhovna Rada of Ukraine 2016. № 3. Art: 25 [in Ukrainian].

[2] *Pro zatverdzhennia Dovidnyka kvalifikatsiinykh kharakterystyk posad pratsivnykiv naukovo-doslidnykh ustanov sudovykh ekspertyz Ministerstva yustytsii Ukrainy: nakaz Ministerstva yustytsii Ukrainy* [On Approval of the Guide to qualification characteristics of the positions of employees of research institutions of forensic examinations of the Ministry of Justice of Ukraine]: Order of the Ministry of Justice of Ukraine dated on April 19, 2012 № 611/5 (with amendments and additions): URL: http://zakon5.rada.gov.ua/laws/show/ ru/v0611323–12 (Date accessed 30.05.2018) [in Ukrainian].

degree, depth, character of assimilation established for forensic experts for their further implementation.

The practice of training specialists in the field of "judicial examination", is widespread abroad. Moreover, it is possible to observe its positive influence on the quality of performance of these specialists in the future of their duties. This is explained by the fact that the knowledge and skills of solving the heuristic tasks in the cognitive and communicative spheres, in combination with the special knowledge gained in the specialization disciplines, will allow graduates of higher education institutions that train experts to significantly reduce the adaptation period of entry into a post to successfully perform the tasks set will form the basis for further professional growth of the expert[1].

In particular, in his study on the problems of expert didactics in institutions of higher education of Ukraine, V. M. Baraniak analyzed the foreign experience of the organization and implementation of the training of forensic experts. He summarized the experience of the Russian Federation, Poland, Slovakia, Hungary, the Czech Republic, and Kazakhstan. For example, in Poland, Slovakia, Hungary and the Czech Republic, after receiving a higher education, individuals receive special training in appropriate courses: they work six months under the control of experienced specialists in criminalistics institutes, and one and a half years are under the control of field specialists. Only after that they get the right to self-fulfillment of examinations. In Kazakhstan, specialists in basic disciplines are involved in general professional training of experts[2].

The given experience of foreign countries from expert didactics guides us to the multi-level education system, which seems to be optimal in the following way: first persons receive higher education in a certain specialty from the corresponding field of knowledge; after that they continue their education, gaining new knowledge, skills and abilities during training in order to qualify a forensic expert; then — confirm their qualification through certain periods. Initial training of forensic experts based on specialist higher education on specific specializations can be carried out both on the basis of specialized state institutions carrying out forensic activities and higher educational establishments.

The researchers of psychological and legal peculiarities of forensic expert work of a specialist-psychologist, include forensic expert activity in the category of "critical", activities. During the performance of the functions of a court expert, professionals work in tense conditions that are related to such peculiarities of their work: complex scientific nature and intensity of

[1] Tkhakokhov A. A. (2014) *Kriminalisticheskie i psihologicheskie aspekty dejatel'nosti sudebnogo jeksperta. Molodoj uchenyj* [Forensic and psychological aspects of the activity of a forensic expert. Molodoi uchenyi]. № 19. P. 427–429 [in Russian].

[2] Baraniak V. M. Papers mentioned above, p. 231–232.

intellectual work, its unregulated duration in the conditions of performing urgent and especially important tasks for expert support of justice; socially influential consequences of the importance of work, high social responsibility for their work and its results; constant moral and psychological load and tension, performance of official duties during the conduct of forensic expert activity in stressful situations; systematic staying on business trips, including trips to places of committing crimes, while performing official duties with a risk to health and life; manifestations of moral and psychological pressure, threats and immediate threats against a forensic expert in connection with the performance of his duties. These actors perform their duties in the conditions of a shortage of time, influence on them of particularly strong stimuli and the dominance of negative emotions in the absence of positive, increased responsibility in making decisions and the need for immediate action, etc. Moreover, the conditions given at the same time are conditioned by the nature of forensic expert activity as a separate type of activity, profession, and also give rise to new difficulties during the implementation of this activity. Terms of implementation of subjects of judicial and expert activity of their tasks can be generated under the influence of both objective and subjective factors. An example of these factors may be the impossibility of fully predicting changes in their own professional activities, which leads to uneven workload of specialists in different periods of time; availability of regulatory legal regulation of the timing of the implementation of the list of actions and measures provided for in the course of judicial examination; the presence of problems of staffing of specialists of districts (turnover of personnel, insufficient volume of professional-psychological potential); improper level of logistics specialists, etc[1]. The preconditions and factors of professional activity of subjects of forensic expert activity also include a high pace, an unregulated mode of work and rest, inconsistencies in workplaces and premises with sanitary and hygiene requirements.

The profession of forensic expert is unique in its content. Each time, performing a forensic examination of practically a large number of issues in the field of science, technology, crafts, etc., he, on the one hand, conducts scientific research to establish factual data and circumstances of the case, and, on the other, acquires the status of a procedural person, and thus his professional activity combines the status of a scientist from the relevant field of knowledge and procedural personality. The court expert, first of all, must be independent of the bodies of pre-trial investigation, court and other process participants. Therefore, the independence of a judicial expert should be ensured by the state by creating the necessary conditions for its activity and

[1] Skrypnyk M. M. Bashynskyi E. V. Skrypnyk M. M. Bashynskyi E. V. (2011) *Psykholohiia diialnosti eksperta. Kryminalistychnyi visnyk* [Kryminalistychnyi visnyk]. № 2(16). P. 34–37 [in Ukrainian].

proper material and social security[1]. The training of experts should also take into account psychological aspects when teaching fundamental and professionally oriented disciplines, especially specialization disciplines; general psychological training as an organized and purposeful process of mastering the general psychological culture; special psychological training as the formation of professionally meaningful psychological properties and features necessary for the successful performance of official tasks[2].

As in any other profession, the expertise of forensic experts lies in the possession of appropriate means, skills, and work operations. In psychology, they are divided into two separates, but at the same time interconnected stages: abilities (action, the basis of which is the practical application of the knowledge gained) and skill (formed automatic action, which does not require the conscious control of special volitional efforts for its implementation). The level of development of these knowledge, skills and abilities is determined by the general human culture, as well as its professional skill. At the same time, the emphasis is placed on the professionalism and skill of a court expert on professional and psychological competence. This competence is multidisciplinary in its content phenomenon. Thus, the professional-psychological competence of a court expert includes three areas, each of which consists of individual components. The first field is motivational (includes personality-motivational competence, general cultural competence, social competence), the second is subject-practical (methodological competence, practical-activity competence, didactic-methodical competence, special-scientific competence, economic-legal competence, ecological competency, valeological competence, information competence, managerial competence, communicative competence), the third is the sphere of self-regulation (psychological competence, self-esteem, auto competence)[3].

In our opinion, the obligatory element of training of subjects of forensic expert activity is the selection of requirements for their professional-speech activity. After all, the level of development of communicative skills and skills directly affects the level of communicative competence, which in general determines the effectiveness of work for each individual employee, and the whole system. In particular, the following skills are important: to correctly define the topic of the statement, to clearly and correctly adhere to its limits; use the most significant facts and evidence to reveal the topic, choose the right facts; to build a statement according to its purpose and the addressee of the

[1] *Problemni pytannia zakonodavchoho rehuliuvannia sudovo-ekspertnoi diialnosti: roz'iasnennia Ministerstva yustytsii Ukrainy vid 15.02.2013* [Problematic issues of legislative regulation of forensic expert activity: explanations by the Ministry of Justice of Ukraine, dated on 15.02.2013] [in Ukrainian].

[2] Skrypnyk M. M. Bashynskyi E. V. Papers mentioned above, p. 35.

[3] *Sudovyi ekspert: psykholohichni aspekty praktychnoi diialnosti: metod. posib. / avt-uporiad. S. O. Shevtsov, S. M. Lozova* (2011) [Forensic expert: psychological aspects of practical activity : methodical textbook / auth-comp. S. O. Shevtsov, S. M. Lozova]. Kyiv, p. 37–39 [in Ukrainian].

broadcast; to establish causal relationships between facts and phenomena, to make correct and correct generalizations and conclusions; use a variety of language tools in accordance with the type, style and genre of the statement[1].

Communicative culture is one of the defining features of a modern person and is a leading place in the general cultural formation of a person. In this regard, today one of the most important aspects of vocational education and training is the training of specialists who have a communicative culture that ensures mutual coordination of activities in professional activities[2]. V. S. Sadovska also points out the dependence of professional culture on the level of communicative culture. She proposes to identify two components of a communicative culture: an activity that characterizes the value of values, knowledge, skills, skills and personal qualities for the implementation of effective professional activities; actually communicative, which determines the significance of these same components for the implementation of effective professional communication. However, such a division is arbitrary, since the interpenetration of these components into one another is evident.

The presented positions of scientists concerning the competence of a judicial expert as a subject of forensic expert activity indicate, first of all, the complexity of the sphere of its functioning. This directly affects the number of requirements that apply to the subject of this activity. In other words, the versatility, complexity of such an element of the expert system of criminal proceedings as forensic expert activity in the first place indicates the need for training personnel with their corresponding socio-psychological and moral qualities of specialists. These qualities ensure the competence of these subjects.

Taking into account the above, the profession of subjects of forensic expert activity becomes especially urgent. What does a professionogram represent? It is a certain set or system of skills and abilities, psychological qualities necessary for the successful pursuit of professional activity[3]. Thus, V. O. Konovalov, examining the professional qualities and psychology of persons conducting proceedings in the case, distinguished among the professionally necessary qualities such qualities as creative thinking, communication skills, volitional qualities, organizational abilities, ability to

[1] Malyk Yu. I. (2009) *Rozvytok komunikatyvnykh navychok yak vazhlyvyi chynnyk uspishnoi diialnosti derzhavnykh sluzhbovtsiv. Derzhavne upravlinnia: teoriia i praktyka.* [Development of communicative skills as an important factor in the success of civil servants. Governance: Theory and practice]. № 2 (10). URL: http://www.academy.gov.ua/ej/ej10/doc_pdf/Malyk.pdf [in Ukrainian].

[2] Sherbakovskyi M. H. (2016) *Priorytetni napriamy vtilennia zasady zmahalnosti u sudovo-ekspertnii diialnosti. Suchasni napriamy rozvytku sudovoi ekspertyzy ta kryminalistyky: tezy dop. nauk.-prakt. konf., prysviach. pam'iati zasl. prof. M. S. Bokariusa, Kharkiv, 20 hrud. 2016 r.* [Priority directions of implementation of the basis of competition in forensic expert activity. Modern directions of forensic science and criminlistics. Theses of academic coference devoted memory of professor. M. S Bokarius Kharkiv, 20 December 2016]. Kharkiv : KhNUIA, p. 309–312 [in Ukrainian].

[3] Ibidem, p. 180.

withstand negative emotions. In addition, she points to the need for constant work on themselves, in order to prevent professional deformation. In particular, it is proposed to make a mutual exchange of positive experience, self-control, self-criticism, and strive to creatively solve professional problems. N. I. Klymenko notes that an expert will not be able to perform his duties without having a set of features that form his professionalism. It is about such moral and psychological qualities and features of an expert's face as professional knowledge, observation, attention, depth of knowledge, flexibility, logic and criticality of mind, independence of thinking, honesty, principledness, ability to "overcome", persuasion, etc[1]. Also, to the socio-psychological qualities that are most important for the performance of their professional activities, based on the results of the questioning of forensic experts-psychologists, suggests to attribute: general and special intelligence (79 %), concentration of attention (56 %), observation (50 %), aspiration for truth (48 %), principledness (47 %), accuracy (43 %), self-organization (41 %), emotional stability (34 %), assimilation (32 %), punctuality (28 %), persistence (26 %), purposefulness (24 %), sensitivity (9 %), etc.[2]

Scientists have proposed other qualities which a professional expert must possess on a par with the development of a generalized reference model of a modern expert-professional[3].

When developing the profession of a subject of forensic expertise, we consider it necessary to take into account the provisions of the Guide to the qualification characteristics of the positions of employees of the research institutions of forensic examinations of the Ministry of Justice of Ukraine[4]. In the professiogram it is possible to consolidate the knowledge of normative legal acts regulating forensic expert and scientific activity; methodologies and special literature on conducting forensic examinations in the field of research; modern achievements of science and technology in the relevant field of knowledge, including the use of special equipment; rules and norms on occupational safety and safety, fire safety; rules of internal labor regulations.

In addition, the professiogram of the subject of forensic expert activity should also include requirements for his personal qualities and abilities. In particular, among the abilities that a forensic expert must possess, they propose to highlight the high level of figurative, logical and analytical thinking; developed spatial thinking; high level of attention stability; high

[1] Klymenko N. I. As to the competence of the court expert. P. 19–23.

[2] Shepitko V. Yu. (2010) *Vybrani tvory* [Selections]. Kharkiv : Apostle, p. 547 [in Ukrainian].

[3] See: *Sudovyi ekspert: psykholohichni aspekty praktychnoi diialnosti: metod. posib.* [Forensic expert: psychological aspects of practical activity : methodical textbook]. p. 332 [in Ukrainian].

[4] *Pro zatverdzhennya Dovidny`ka kvalifikacijny`x xaraktery`sty`k posad pracivny`kiv naukovo-doslidny`x ustanov sudovy`x eksperty`z Ministerstva yusty`ciyi Ukrayiny`* [On Approval of the Guide to qualification characteristics of the positions of employees of research institutions of forensic examinations of the Ministry of Justice of Ukraine [in Ukrainian].

concentration and switching attention; high level of memory development; mathematical abilities; Ability to clearly, clearly, concisely express your thoughts in any form; Ability to quickly analyze and process incoming information. With regard to personal qualities, among such requirements is the ability to predict events; propensity to research; observation; responsibility; diligence, systematic work; patience; criticality; attentiveness; binding, neatness; honesty, principledness; concentration; emotional and volitional stability; independence, perseverance; demanding oneself and others[1].

Thus, the professional model of subjects of forensic expert activity appears to be an exemplary scheme of the profession of a forensic expert. This scheme should include the following components.

1. Content of work:

— Activity of the expert is clearly regulated;

— Performing a complete, independent, objective and substantiated research;

— Procedural independence from the parties in the case, court, bodies of pre-trial investigation;

— Exclusive competence of the expert in determining the method of conducting an examination (the selection of certain methods (methods) of the study);

— Resolving issues that are part of the expert's specialist knowledge and the prohibition of clarification of law issues;

— Social significance, resonance of the case;

— Increased attention from the participants of the proceedings and other interested persons in the research results;

— Criminal (administrative) liability of a forensic expert in case of violations of the law;

— Fulfillment of the obligation of non-disclosure of data that became known to the expert during the examination;

— Intensity and intensity of work, the consequences of which are psycho-physiological overload;

— Need for continuous improvement of qualification and improvement of their knowledge, skills and practical skills, study of new research methods, new types of instrumental equipment, obtaining practical experience with it;

— Abnormal working day, etc.

2. Professionally important qualities:

[1] Shepitko V. Yu. (2010) *Vybrani tvory* [Selections]. Kharkiv : Apostle, p. 547.

2.1. Psychophysiological parameters: high working capacity, stability and ability to prolong attention concentration, concentration, emotional stability (stress resistance).

2.2. Personality qualities: organization, discipline and self-organization, perseverance, curiosity, determination, purposefulness, independence; legal consciousness; attentiveness, observation, assemblage, conscientiousness, diligence, precision, flexibility, criticality, sustainability; vigilance, initiative.

2.3. Intellectual qualities: logical thinking, verbal intelligence, analytical mind.

2.4. Moral qualities (ethical rules): principledness, the existence of firm beliefs and the desire to realize them in life; firm confidence in the reliability of the outcomes (the expert's internal conviction is formed); no balance; correct relations with the persons appointed by the expert examination, and other participants in the process.

3. Knowledge, skills: expert should have basic knowledge, especially as regards the conduct of expertise in various types of legal proceedings, the legal status of an expert, normative documents in the field of forensic expert activity, as well as special knowledge in the field of criminalistics, forensic expert studies, within the competence to possess methods and methods of conducting forensic examinations, including complex ones.

4. Working conditions: in laboratory conditions, outside the office (at the place of the event or at the location of the research object); social contacts are limited by the prohibition to enter into an unplanned examination of contacts with individuals, if such persons are directly or indirectly interested in the results of the examination; work involves trips to the place of adventure and business trips; work with computer and forensic equipment, laboratory equipment, office equipment, special means, measuring instruments; work with harmful and dangerous substances and objects; close interaction with the bodies of pre-trial investigation and court within the limits of the current legislation; irregular working day; the work is regulated by normative legal acts instructions and is individual.

5. Medical countermeasures: state of health that does not allow the performance of a judicial expert's function.

6. Circumstances prohibiting the participation of a person as an expert: a person who is recognized as incapacitated in accordance with the law, as well as that which has not been canceled or not recovered, or for which during the last year is not allowed to be engaged in the performance of the duties of a judicial expert an administrative penalty for committing a corruption offense or a disciplinary sanction in the form of deprivation of professional qualifications of a judicial expert was imposed.

7. Requirements for professional training: Forensic scientist of state specialized institutions can be experts having appropriate higher education, educational qualification level not lower than a specialist, have been trained and qualified for a forensic expert in a particular specialty. Forensic experts who are not employees of specialized state institutions: have appropriate higher education, educational qualification level not lower than a specialist, have been trained in state specialized institutions of the Ministry of Justice of Ukraine, have been certified and qualified by a judicial expert in a certain specialty in an order, stipulated by the Law of Ukraine *On Judicial Examination*. Forensic experts may be individuals who have the necessary knowledge to provide an opinion on the issues under investigation.

8. Related professions: forensic experts (criminalists) of state specialized institutions; forensic experts who are not employees of state specialized institutions; professors of forensic science and forensic expertise (forensic expert studies) at an educational institution; scientific workers of state specialized institutions.

9. Range of positions: court expert — senior judicial expert — leading court expert — chief judicial expert — unit manager (his deputy) — head of a specialized expert institution (his deputy); Junior Researcher — Researcher — Senior Researcher — Senior Researcher — Senior Researcher of a Specialized Scientific Institution (who is qualified as forensic expert).

10. Ability to carry out an activity of an expert either alone or in a legal entity that is not a state specialized institution: Forensic expert activity related to forensic, forensic, forensic psychiatric examinations and criminal proceedings can be conducted exclusively by state specialized institutions. Individual labor activities are carried out by experts who are not employees of state specialized institutions, solely according to expert specialties, determined in accordance with the annex number 6 to the Regulations on expert-qualification commissions and the certification of forensic experts.

11. Demand for a profession in the labor market: on the one hand, there is a demand for specialists in specific fields of knowledge in connection with the political and economic situation in the country (military experts, specialists in explosive engineering expertise, linguists experts, psychologists, experts IT technologies, experts in the field of intellectual property research, etc.). Increasingly, there is a demand for private experts from forensic types of expertise (for example, judicial post-graduate studies, etc.). On the other hand, the lack of interest in the work, which does not have the proper social and material support and the state's inability to provide adequate funding for state expert institutions.

Thus, the professional model of subjects of forensic expert activity is developed taking into account the peculiarities of forensic expert activity as a

sphere of activity of a judicial expert and his profession. This will provide an opportunity to highlight the main criteria that a judicial expert must meet, which will optimize and increase the efficiency of the activity of the entities of forensic expert activity in the expert justice system in Ukraine.

УДОСКОНАЛЕННЯ ПРОФЕСІЙНОЇ ПІДГОТОВКИ СУДОВОГО ЕКСПЕРТА — ВАЖЛИВИЙ ФАКТОР РОЗВИТКУ ЕКСПЕРТНОЇ ДИДАКТИКИ

Н. М. Ткаченко

Розглянуто питання вдосконалення професійної підготовки судового експерта. Підготовка кадрів судових експертів є одним з найважливіших засобів експертного забезпечення правосуддя в державі, оскільки тільки фахівець високого наукового рівня здатний забезпечити надання об'єктивного висновку на основі використання спеціальних знань в будь-якому виді судочинства. Саме тому створення ефективної моделі комунікативної діяльності судового експерта відіграє важливу роль під час підготовки судово-експертних кадрів. Особливої актуальності набуває професіографія суб'єктів судово-експертної діяльності. Запропоновано професіографічну модель суб'єктів судово-експертної діяльності, що є приблизною схемою професіограми судового експерта. Ця схема повинна включати такі компоненти: зміст роботи; професійно важливі якості; знання, навички, уміння; умови роботи; медичні протипоказання; обставини, що забороняють особі виконувати функції судового експерта; вимоги до професійної підготовки; споріднені професії; діапазон посад; можливість здійснення трудової діяльності експертом самостійно або в складі юридичної особи, що не є державною спеціалізованою установою; попит на професію на ринку праці. Розкрито характеристики зазначених компонентів професіограми.

Ключові слова: експертна дидактика, професіографія суб'єктів судово-експертної діяльності, професіограма, професія судового експерта, наукова діяльність, спеціальні знання.

УСОВЕРШЕНСТВОВАНИЕ ПРОФЕССИОНАЛЬНОЙ ПОДГОТОВКИ СУДЕБНОГО ЭКСПЕРТА — ВАЖНЫЙ ФАКТОР РАЗВИТИЯ ЭКСПЕРТНОЙ ДИДАКТИКИ

Н. Н. Ткаченко

Рассмотрены вопросы усовершенствования профессиональной подготовки судебного эксперта. Подготовка кадров судебных экспертов является одним из важнейших средств экспертного обеспечения правосудия в государстве, поскольку только специалист высокого научного уровня способен обеспечить предоставление объективного заключения на основе использования специальных знаний в любом виде судопроизводства. Именно поэтому создание эффективной модели коммуникативной деятельности судебного эксперта играет важную роль при подготовке судебно-экспертных кадров. Рассмотрены некоторые вопросы подготовки экспертных кадров в Украине и за рубежом. Обязательным элементом подготовки субъектов судебно-экспертной деятельности является выделение требований к их профессионально-речевой деятельности. Ведь уровень развитости коммуникативных умений и навыков непосредственно влияет на уровень коммуникативной компетенции, в целом определяет эффективность работы как каждого отдельного работника, так и всей системы. Особенную актуальность

приобретает професиография субъектов судебно-экспертной деятельности. Профессиограмма — это определенная совокупность или система умений и навыков, психологических качеств, необходимых для успешного выполнения профессиональной деятельности. Автором предложена профессиографическая модель субъектов судебно-экспертной деятельности, которая является примерной схемой профессиограммы судебного эксперта. Эта схема должна включать такие компоненты: содержание работы; профессионально важные качества; знания, навыки, умения; условия работы; медицинские противопоказания; обстоятельства, запрещающие лицу выполнять функции судебного эксперта; требования к профессиональной подготовке; родственные профессии; диапазон должностей; возможность осуществления трудовой деятельности экспертом самостоятельно или в составе юридического лица, которое не является государственным специализированным учреждением; спрос на профессию на рынке труда. Автором раскрыты характеристики указанных компонентов профессиограммы.

Ключевые слова: экспертная дидактика; профессиография субъектов судебно-экспертной деятельности; профессиограмма; профессия судебного эксперта; научная деятельность; специальные знания.

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MOTIVATION WAYS FOR EMPLOYEES OF FORENSIC SCIENCE INSTITUTES OF UKRAINE

The essence of motivation in comparison with stimulation is revealed, its place in the creation of stable internal motives, which encourage employees of forensic institutions to continuous personal development and development. The connection between the necessity of using modern methods of employee motivation and prospects of sustainable development of forensic institutions is indicated.

Keywords: staff, motivation, stimulation, forensic science institute, needs, motivation, institute sustainable development.

The sustainable development of an organization in any field of activity today depends on the possibility of implementing the potential of employees. The courts and expert institutions of the Ministry of Justice of Ukraine (hereinafter — FSI), which combine expert and scientific activity and set high requirements for the level of competence of their employees, are not an exception. Indeed, FSI employees who work as court experts or research staff, on the one hand, must be highly skilled professionals, and on the other hand, they have the opportunity to reveal their creative potential simultaneously in these two areas of activity. It should be noted, however, that the full

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implementation of the potential of each employee fully and completely depends on the motivation of work in this institution.

The purpose of the article is to outline the ways and methods of motivating the FSI employees in the context of providing the formation of the needs of the individual employee to continuous self-personal improvement through the sustainable development of the FSI in general.

Sometimes scholars argue that the concepts of "motivation", and "stimulation", are identical. It is difficult to agree with such statements, since stimulation is based on external factors, whereas motivation is based on factors within the person. That is why motivation will act as an internal motive for the employee's specific behavior, aimed at satisfying his most diverse personal needs. In turn, stimulation manifests itself as an external influence and can motivate a person to take different actions and form an infinite number of motives in her.

These are the differences noted in the works of Ukrainian scholars. There is no objection when O. I. Amosha and his co-authors draw attention to the fact that the stimulation function carries out external motivation, which acts in the form of administrative, economic, social, moral and psychological influence[1]. One can agree with V. M Daniuk and V. M Letiukh, who emphasize that the stimulus becomes a motive only when it passes through the consciousness of a person and is perceived by[2]. V. M. Hrynov and O. M. Yastremska defended an interesting position, arguing that the concept of "motivation", is associated with moral status, and "stimulation", — with the material needs of man[3].

Given the outlined positions of the scholars, the motivation of the employee emerges as an incentive for him to meet his own needs and achieve personal goals through the achievement of the goal of the institution in which he works. Only under such conditions can simultaneously meet the needs of an individual employee and the institution in which he works, to ensure that the institution achieves a certain goal and to guarantee the sustainable development of the institution as a whole and each individual employee. Consequently, it should be emphasized that to create a stable motivation for a staff member to meet their own needs, in addition to other means, a tool such as incentives should be used.

[1] Amosha O. I. Antoniuk V. P. Zemliankin A. I. (2007) *Aktyvizatsiia innovatsiinoi diialnosti: orhanizatsiino-pravove ta sotsialno-ekonomichne zabezpechennia: monohrafiia* [Activation of innovation activity: organizational, legal and socio-economic support : monograph]. Donetsk Institute of Industrial Economics, National Academy of Sciences of Ukraine, p. 108 [in Ukrainian].

[2] *Menedzhment personalu: navch. posib. / za zah. red. V. M. Daniuka ta V. M. Letiukha* (2004) [Staff Management : textbook / edited by V. M. Daniuk and V. M. Letiukh]. Kyiv : KNEU, p. 109 [in Ukrainian].

[3] Hrynova V. M. Yastremska O. M. (2006) *Problema upravlinnia trudovymy resursamy pidpryiemstva* [The problem of management of labor resources of the enterprise]. Kharkiv : KhNUE, p. 109 [in Ukrainian].

At the same time, it is necessary to clearly understand that all human needs, regardless of whether they are of material or non-material nature, are formed on the basis of its consciousness. This process is influenced by the intentions and desire of a person to perform a specific job, to achieve relevant results in the process of their work and to obtain from the work the result that allows them to meet these needs.

This is very important, since the work of the FSI staff, regardless of whether they occupy the position of forensic experts or research staff, is always related to the need to realize the creative potential of the individual. The daily work of the employees of these institutions requires them to seek, develop and implement new approaches in solving their tasks[1]. It can be argued that the activities of both the forensic experts and the scientific staff of the FSI have elements of novelty, rationalization and creativity, which determines its high efficiency, in contrast to the purely executive work. However, this in turn leads to the need to identify factors that result in the employee having similar needs in the creative activity and the motives that encourage him to do this. It is these specific needs that should be of paramount importance when creating a system of motivation in the FSI.

In the basis of the formation of such needs in the incentive system, along with the material component must be non-material, which will determine the employee's ability and desire to professional development through the acquisition of new knowledge and advanced training. At the heart of their emergence is the unity of the head of the institution and the employee, which in the future will ensure the development of the institution in an intensive, rather than extensive way. In other words, investing in human capital (in this case, the material and intangible components of motivation should be used together) will allow to form the necessary level of qualification of employees, thus the CEU will provide in the future guarantees of sustainable development.

In determining the motivation of the CEU employee as the main component in the process of implementing its potential for sustainable development of the institution, it is necessary to correctly select and use all the diversity of methods of motivation. Among all methods, one can identify those used to meet material needs (material methods): bonuses, one-time rewards, additional paid leave, valuable gifts, etc., as well as those that are called moral: conviction, personal example, coercion, recognition (may be public or personal), social and psychological influence, as well as ethical norms, moral incentives, etc.

[1] Petrova I. A. Snigerov O. P. (2017) *Formuvannia osobystosti suchasnoho sudovoho eksperta. Teoriia ta praktyka sudovoi ekspertyzy i kryminalistyky* [Formation of personality of modern forensic expert Theory and Practice of Forensic Science and Criminalistics]. Kharkiv : Pravo, Issue 17. P. 165–171 [in Ukrainian].

The problem of increasing the effectiveness of material motivation of employees is one of the "eternal", problems and is very relevant in modern economic conditions. This is due to at least two reasons, among which: low incomes of the population having a deformed structure and a clearly expressed differentiation; the need to use new content forms and methods of material motivation of staff. Sometimes executives do not see another method of motivating an employee comparable to efficiency with means of material motivation.

Indeed, material motivation gives a quick result, the more so that the leadership of the CEU is backed up by law. Thus, at the legislative level, the positions of forensic experts and scientific staff of the CEU are fixed, with each post corresponding to a certain minimum and maximum salary. Using material motivation, a leader may, within a single position, appoint a different salary, raise his position or appoint him to a lower position (as a means of punishment). In addition, the law provides for the possibility of setting various allowances: for achieving the corresponding results, for the complexity and intensity of work, for the achievement of various indicators, etc. Undoubtedly, such measures allow very quickly to get the desired result, since money must stimulate an employee to work efficiently. Motivation, in turn, determines to what extent the employee realizes his professional potential in the work. The salary received by an employee should also solve additional tasks of the institution: attracting and retaining the best professionals. Moreover, with the help of money the institution has the opportunity to demonstrate to the employee that she highly appreciates the results of his work and professional achievements.

It is known that almost every person can be forced to work, but cannot be forced to love his work. This is possible only when the person himself wants it. That is why each manager should find effective levers of influence on the motivation of the subordinates, and it does not matter is the head of the institution or its structural subdivision; it should inspire its subordinates for effective and productive work.

Obtaining material goods should only be considered as a means to gain freedom for self-realization of personal potential, which is today very relevant for working youth. Labor activities, provided a certain level of material wealth always provides opportunities for the implementation of knowledge, development of their own abilities and forms moral satisfaction from their own work. In addition, this state of motivation also allows for the independence of a forensic expert in his activities, as stipulated by the requirements of Art. 3 of the Law of Ukraine *On Judicial Expertise*, namely:

forensic expert activity is carried out on the principles of legality, independence, objectivity and completeness of the research[1].

It is advisable to borrow experience from overseas leading companies that have developed and implemented new methods of material motivation of staff, combining the material interests of the employee and the company. Among such methods can be distinguished: individualization of wages, group stimulation, adherence to the key indicators of efficiency, which estimates the work of each employee. The outlined methods of motivation can find their implementation in the FSI.

Today, the use of material incentives without orientation on non-material motivation does not have the same effect as the simultaneous use of these two methods. Intangible motivation should be a priority and a part of the culture of each FSI, since its methods have a significant impact on each individual employee and related to the desire of employees to meet their secondary needs (involvement, recognition, self-affirmation)[2]. These methods have a socio-psychological orientation and are widely used by leading foreign companies.

Intangible motivation is a process aimed at nonmonetary promotion of each individual employee and the formation of the corporate spirit of the institution as a whole. Intangible benefits are characterized by improved working conditions in each structural subdivision of the institution and allow the employees to formulate stable motivation for certain positive actions, since in the minds of each individual employee there is an actual idea of what should be a work place, work and leisure mode, participation in management team and employee relations. For example, in the Kharkiv RIFE the system of non-material incentives is connected with the implementation of organizational, technical, socio-economic and social measures, which should include: a powerful restoration of the institute's building, the purchase of modern equipment and equipment, the equipping of each workplace with new office equipment, holding training sessions for judicial experts and improving their qualifications, holding conferences, seminars, round tables, etc. Such measures allow each staff member of the institute to feel involved with its development.

The choice of methods of non-monetary motivational influence should be as objective as possible and reflect the structure of the staff of the institution as a whole. Only under such conditions will the system of motivation be effective. To motivate the staff of the FSI today, the following methods of non-material motivation are widely used, such as: corporate career planning, availability of training and advanced training programs, employee

[1] *Pro sudovu ekspertyzu : Zakon Ukrainy* [On Judicial Examination : The Law of Ukraine] from 25.02.1994 № 4038–XII (with changes and annexes). Bulletin of Verkhovna Rada of Ukraine 1994. № 28. Art: 232 [in Ukrainian].

[2] Maslow A. H. (2009) *Motivacija i lichnost'* [Motivation and Personality]: [Translated from English.]. SPb. : Piter, p. 352 [in Russian].

gifts for holidays, etc. The use of non-material motivation methods requires careful substantiation of the whole system of motivation in an institution and is complicated by its own motives for each individual employee and the tasks of the institution as a whole. That is why the selection of methods of influence on employees should be as objective as possible and reflect the structure of the motives of employees and the institution as a whole. Properly developed system of non-material motivation allows to increase the potential of each individual employee, gives him the opportunity to realize his own purpose and most importantly — he delights in the work performed, which in the future forms a stable motivation of the employee in achieving the goals of the institution as a whole[1].

In a separate group of methods of employee motivation, it is necessary to distinguish "social". This group combines the processes of simultaneous meeting the material needs such as the level of employee income, which determines its competitiveness in the labor market, and the moral needs that shape its social status and place in society, confidence in the next day and the degree of socialization in society. These components are especially important for FSI employees, from which society expects high professionalism.

The above factors indicate the need to use the methods of motivation of FSI employees using fundamentally new approaches, not only taking into account the specifics of the activities of these institutions, but also with the full use of the methodology of personnel management. When developing and implementing methods for motivating employees in the FSI, it is necessary to use the systematic organization of such a process. It is necessary to balance the main motives of managers and subordinates for the continuous development of employees and institutions at the same time. This will allow to realize the principles of formation of the directions of sustainable development of FSI, which take into account the methods and the degree of solving problems today and in the future. When considering the possibilities of sustainable development of FSI it is necessary to focus on the following factors:

— Balance of the needs for sustainable development of the institution of managers and subordinates on the basis of compliance with the level of satisfaction of material needs of employees for the useful result of the CEU;

— motivation to form and realize its potential by employees in accordance with the priorities of sustainable development of the institution;

[1] Honchar V. V. Obukhova N. O. (2015) *Metody nematerialnoho motyvuvannia personalu na promyslovykh pidpryiemstvakh u kryzovyi period. Teoretychni i praktychni aspekty ekonomiky ta intelektualnoi vlasnosti* [Methods of non-material motivation of personnel at industrial enterprises in a crisis period. Methods of non-material motivation of personnel at industrial enterprises in a crisis period]. Issue 2(12). V. 3. P. 125–131.

— creating conditions for CEU management to enable employees to meet their own personal development needs through advanced training and obtaining new knowledge — investing in human capital;

— compliance of methods of motivation of employees for each group of priorities of sustainable development of FSI on the basis of the formed human capital[1].

Thus, it can be argued that the basis of sustainable development of CEU at the present stage of development of social relations should be the satisfaction of the primary and secondary needs of employees through the formation in them of the internal motivation to continuous development as high-class professionals. Such motivational mechanism will be effective, which allows to take into account all the specifics of the specific CEU and has the methods of motivation that are most useful for this institution and provide motivation for employees. It is precisely the use of employee motivation, as a tool for managing personnel, that enables the CEU leadership to predict and substantiate the prospects for its development in the immediate and distant future.

ШЛЯХИ МОТИВАЦІЇ СПІВРОБІТНИКІВ СУДОВО-ЕКСПЕРТНИХ УСТАНОВ УКРАЇНИ

І. А. Петрова

Розкрита сутність мотивації в порівнянні із стимулюванням, визначено її місце у створенні стійких внутрішніх мотивів, які спонукають співробітників судово-експертних установ до безперервного особистісного вдосконалення та розвитку. Указано на зв'язок необхідності використання сучасних методів мотивації співробітників із перспективами сталого розвитку судово-експертних установ.

Ключові слова: персонал, мотивація, стимулювання, судово-експертні установи, потреби, спонукання, сталий розвиток установи.

ПУТИ МОТИВАЦИИ СОТРУДНИКОВ СУДЕБНО-ЭКСПЕРТНЫХ УЧРЕЖДЕНИЙ УКРАИНЫ

И. А. Петрова

Постоянное развитие организации в любой сфере деятельности сегодня зависит от возможности реализации потенциала сотрудников, которая целиком и полностью зависит от мотивации работы в этом учреждении. Автором очерчены пути и методы мотивации сотрудников судебно-экспертных учреждений в контексте обеспечения формирования потребности отдельного сотрудника к беспрерывному личному усовершенствованию через постоянное развитие судебно-

[1] Petrova I. A. (2018) *K voprosu o neobhodimosti motivacii sotrudnikov sudebno-jekspertnyh uchrezhdenij Ukrainy: Perspektivy partnerstva gosudarstv — chlenov ShOS v sfere sudebnoj jekspertizy : materialy mezhdunar. nauch.-prakt. konf., 20–21 ijunja 2018 g.* [On the issue of administrative and legal provision of accreditation of forensic institutions of Ukraine. Prospects for the partnership of the SCO member states in the field of forensic expertise: Content of International Academic. Conference, June 20–21, 2018]. Kazakhstan, Astana [in Russian].

экспертного учреждения в целом. Рассмотрены соотношение понятий «стимулирование» и «мотивация», определены их природа и действие на человека, роль мотивации в создании стойких внутренних мотивов у работников. Мотивация сотрудника определяется, как побуждение его к удовлетворению собственных нужд и достижения личных целей через достижение цели учреждения. Наряду с этим, подчеркнуто, что для формирования у сотрудника стойкой мотивации для удовлетворения собственных нужд кроме других средств нужно использовать такой инструмент, как стимулирование. Автор отмечает, что инвестирование (целесообразно использовать совместно материальную и нематериальную составные мотивации) в человеческий капитал позволит сформировать необходимый уровень квалификации сотрудников, благодаря чему судебно-экспертное учреждение обеспечит себе в будущем гарантии постоянного развития. Очерчены общие черты материальной и нематериальной составных мотивации и замечено, что использование методов мотивации нематериального характера требует тщательного обоснования всей системы мотивации в учреждении. Особое внимание уделено необходимости сбалансирования основных мотивов руководителей и подчиненных для беспрерывного развития сотрудников и учреждения одновременно. Эффективным усматривается такой мотивационный механизм, который позволяет учитывать всю специфику конкретного судебно-экспертного учреждения и имеет в своем распоряжении методы мотивации, которые являются наиболее полезными для этого учреждения и обеспечивают мотивацию каждого сотрудника.

Ключевые слова: персонал, мотивация, стимулирование, судебно-экспертные учреждения, потребности, побуждение, стабильное развитие учреждения.

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PRINCIPLES OF FORENSIC SCIENCE

On the basis of the analysis of the opinions of scientists, the principles of forensic expert studies as an independent science formulated as the basis of forensic expert activity are formulated. The principles of forensic expert activity are singled out, their relationship with the principles of science is determined. The content of each of the principles is disclosed and a true understanding of the feasibility of their application is provided.

Keywords: forensic expertology, forensic expert activity, principles, objectivity, determinism, legality, independence.

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It is known that the "principle" (principium) in translation from the Latin language means the basis, the primary source. Under the principle understand the guidelines, the basic rules of any activity, the initial provisions of science[1]. According to another interpretation, the principle — 1) first principle, that underlies a certain set of facts, theory, science; 2) internal beliefs of a person, those practical, moral and theoretical principles, which it guides in life, in various spheres of activity[2]. From the above it follows that the principles can apply: to science, as a certain system of knowledge; practical activity of a person or to its internal, personal characteristics.

The principles of forensic examination were considered at various times by the leading Ukrainian scientists and scientists of the near abroad: T. V. Averyanova, I. A. Aliyev, L. Yu. Arocker, R. S. Belkin, A. I. Wienberg, V. G. Goncharenko, F. M. Jawadov, A. V. Dulov, A. O. Eisman, V. A. Zhuravel, A. M. Zinin, A. V. Ishchenko, N. I. Klimenko, V. O. Konovalova, B. K. Lisichenko, N. P. Maylis, G. M. Nadgorny, Y. K. Orlov, O. R. Rossinskaya, M. V. Saltevsky, M. Ya. Sagey, E. B. Simakova-Yefremane, G. M. Sokolovsky, I. Ya. Friedman, V. Yu. Shepitko, O. R. Shlyakhov, M. G. Sherbakovskyi and others. But, despite a sufficient number of scientific publications on this issue, some provisions on the principles of forensic expertise remain controversial and require further development.

As it was noted, from the philosophical understanding of "principles", it is necessary to distinguish between the principles of science and practical human activity. Expert activity is a specific kind of human activity, which consists in conducting an expert research of material objects, processes and phenomena in order to provide scientifically grounded conclusions. Scientific basis of expert activity is judicial expertology, which is defined as a system of knowledge about the laws of conducting forensic examinations and based on them means and methods of studying various kinds of material objects, processes or phenomena[3]. Consider a more detailed system of principles of forensic expert analysis and forensic expert activity.

One of the first tried to determine the principles of forensic examination A. V Dulov. Based on the principles of the criminal process, he singled out the following: 1) investigation by a forensic expert during the examination of only the materials, fixed procedurally in a criminal case; 2) expert

[1] *Akademichnyi tlumachnyi slovnyk ukrainskoi movy* [New Explanatory Dictionary of the Ukrainian Language]. URL: http://sum.in.ua/... [in Ukrainian].

[2] *Filosofskyi entsyklopedychnyi slovnyk / Nats. akad. nauk Ukrainy, In-t filosofii im. H. S. Skovorody; pid red. V. I. Shynkaruka* (2002) [Philosophical Encyclopedia Dictionary / National Academy of Sciences of Ukraine, Institute of Philosoph, edited by V. I. Shynkaruk]. Kyiv : Abris, p. 519 [in Ukrainian].

[3] Pyrih I. V. (2015) *Teoretyko-prykladni problemy ekspertnoho zabezpechennia dosudovoho rozsliduvannia: monohrafiia* [Theoretical and applied problems of expert support of pre-trial investigation : monograph]. Dnipropetrovsk : Dnipropetrovsk State University of Internal Affairs; Lira LTD, p. 126 [in Ukrainian].

examination on primary evidence; 3) conducting all necessary researches in the process of examination by the expert himself; 4) complete and clear fixation in the act of the expert and in the annexes to him the entire course of research, techniques, methods, analysis and synthesis of those materials of the case, on the basis of which they are given a conclusion[1]. While analyzing certain principles, it may be noted that the first two belong to the organization of the examination, which relies on the organs of pre-trial investigation or court. The expert examines only those objects provided to the investigator for the examination. Clarification of questions or they are fixed in a procedural way in the case, or are primary or derivative evidence does not fall within its competence. The last two principles, in our opinion, are rather the duties of the expert and are perceived as understandable things.

Considering the principles of the science of forensic expertise, we adhere to the statement of R. S. Belkin, expressed by him in relation to the principles of forensic science. Under them should understand those initial provisions that determine the epistemological orientation of forensic scientific research, while considering the latter as one of the varieties of the only in its epistemological essence of the process of scientific knowledge of the objective world. This understanding of the principles of criminology allows us to conclude that in the above sense there can be no specific principles of a certain field of knowledge, but there is the application of general principles of science to the knowledge of a specific subject of criminalistics[2]. In accordance with this statement it can be noted that the principles of forensic expert studies do not differ from the principles of criminology, as basic science and general principles of epistemology. Under the principle in the theory of cognition understand the basic principle, the starting point of a concept, that underlies a separate set of knowledge[3]. Such principles of scientific knowledge R. S. Belkin highlights three: objectivity, historicism, systematic character. E. B. Simakova-Yefremian[4] supports the stated opinion of R. S. Belkin. T. V. Averyanov a distinguishes four principles: determinism (causality, historicism), objectivity, systematic character, scientific substantiation[5]. We also adhere to this position, with the exception of the last

[1] Dulov A. V. (1959) *Voprosy teorii sudebnoj jekspertizy v sovetskom ugolovnom processe* [Issues of theory of Forensic Science in the Soviet criminal procedure]. Minsk : Publishing house of BSU, p. 30–54 [in Russian].

[2] Belkin R. S. (2001) *Kurs kriminalistiki : ucheb. posobie dlja vuzov. 3-e izd., dopolnennoe* [Criminalistics course : textbook for Higher Schools. 3rd ed.]. Moscow : YUNITI-DANA, Zakon i pravo, p. 166, 167 [in Russian].

[3] Andryev I. D. (1979) *Teorija kak forma organizacii nauchnogo znanijae* [Theory as a form of organization of scientific knowledge]. Moscow, p. 10 [in Russian].

[4] Simakova-Yefremian E. B. (2016) *Kompleksni sudovo-ekspertni doslidzhennia: teoriia ta praktyka: monohrafiia* [Comprehensive forensic research: Theory and practice : monograph]. Kharkiv : Pravo, p. 85 [in Ukrainian].

[5] Averianova T. V. (2007) *Sudebnaja jekspertiza: kurs obshhej teorii* [Forensic science. general theory course]. Moscow : Norma, p. 160 [in Russian].

principle, which, in our opinion, arose in connection with the author's position regarding the identification of forensic expert-examination and forensic expertise. The principle of scientific substantiation of forensic expert activity is quite permissible, but this principle in relation to the science of forensic expert-level practice looks like “much of a muchness”.

The principle of determinism is to consider the subject of forensic expert analysis in terms of dialectical patterns of interconnection and interdependence of processes that arise during expert research. During the study, the expert knows certain material objects that exist regardless of his consciousness. At the same time, it is necessary to proceed from the properties of the object itself, and not the expert's opinion about it, that is, not the object should be subordinated to thinking, but vice versa. All objects should be considered in the interconnection of their individual properties. Each subject represents a definite unity of the organically interconnected parties. At the same time, he is in different ties and relationships with an infinite number of other subjects and processes. These relationships and relationships determine and simultaneously reveal the nature of an object, process or phenomenon. Therefore, in order to know the essence of one or another thing, it is necessary to consider the totality of its parties separately and in the interconnection. In carrying out any identification examination, it is necessary to determine the complex of features of the object that coincide or differ from the provided samples and, on the basis of their comprehensive analysis, to reach certain conclusions and to determine the patterns that can be traced in the study of this object.

The principle of determinism encompasses the principle of historicism, stated by R. S. Belkin. The subject of knowledge must be viewed from the perspective of its origin, development and disappearance, that is, in the constant development and movement. This requirement is based on the recognition of the universality of motion and its inextricable connection with matter. Any object develops in a movement that reflects its essence and for the knowledge of this object it is necessary to consider it in motion, to trace the origin and development, the transition from one stage of development to another. Any expert methodology does not occur by chance, it is based on previous research, supplementing and developing them. With the advancement of expert tools and methods, certain techniques disappear, serving as the basis for the formation of new ones. Thus, methods of studying objects by photographic methods based on the use of analog cameras and photographic materials have disappeared, however, methods based on the research of objects with the use of digital techniques (for example, color separation method) arose on this basis.

The principle of objectivity is to establish the laws of forensic expert analysis solely on the basis of the study of objects using special knowledge,

regardless of social, political and other processes occurring in society. Undoubtedly, the development of society in one way or another affects the development of any science. First of all, it is the material provision of the country and the desire of politicians to promote the formation and development of research institutions and organizations. But this does not mean the creation of science to meet the needs of those who allocate financial resources for it. Forensic expert science is a science created to provide justice, so the principle of objectivity is very important in modern conditions of judicial reform.

System of forensic expert studies, as well as any other science, consists in the consideration of its separate components as a single whole, a system of knowledge. As T. V. Averianov correctly notes, specificity of the principle of systematic character for forensic examination is directly related to its synthetic nature: along with the systematic approach to the knowledge of each "maternal", science, forensic examination considers its integrated knowledge as a whole as a system, as a set of interconnected, interconnected parts of the whole[1]. The principle of systematic character is connected with the principle of determinism. Some parts of the system of forensic expert studies are interrelated. The existence and emergence of new theories or sections is interdependent. Due to the adherence to the principle of systematic character, it is possible to plan the development of science, predict the emergence of new methods and methods of studying objects.

As noted earlier, it is necessary to divide the principles of science — forensic expert analysis and principles of expert activity. At the legislative level, the principles of forensic expert activity are specified in Art. 3 of the Law of Ukraine *On Judicial Examination:* Forensic-expert activity is carried out on the principles of legality, independence, objectivity and completeness of research[2]. Consider these principles in more detail.

Lawfulness is the basic principle of any field of law. In the modern sense, legality is a mode of public life, a method of state administration, which consists in organizing social relations by publishing and steadily implementing laws and other legal acts. Lawfulness is the general principle of organizing a modern democratic state, ensuring the rights of the individual, maintaining the rule of law in the country[3].

There are different interpretations of this principle in relation to expert activity. In the comments to Art. 3 of the Law of Ukraine *On Forensic Examination*, by V. H. Honcharenko states: "The principle of legality means

[1] Averianova T. V. Papers mentioned above, p. 161.

[2] *Pro sudovu ekspertyzu : Zakon Ukrainy* [On Judicial Examination Law of Ukraine], dated on25.02.1994 № 4038–XII. Bulletin of Verkhovna Rada of Ukraine 1994. № 28. Art: 232. URL: http://zakon2.rada.gov.ua/laws/show/4038–12.

[3] Klymenko N. I. (2007) *Sudova ekspertolohiia: kurs lektsii : navch. posib*. [Forensic Expertise : cycle of lectures. Tutorial]. Kyiv : Publish: In Yure, p. 69.

that any research based on the use of specialist knowledge of a judicial expert, even when based on modern advances in science and technology, has no evidential value, if the procedural requirements for appointment or conducting forensic examination are violated"[1]. The author further emphasizes the observance of the laws when using the findings of forensic examinations. Activities on the appointment of an expert examination and the use of its findings are investigative activities, which also need to adhere to the principle of legality. With the assertion regarding the observance of the law during the examination, we certainly agree.

According to N. I. Klymenko, the principle of legality in forensic expert activity has several aspects. This is the provision and protection of the rights and freedoms of citizens in the conduct of state forensic expertise both from the judicial expert institutions themselves and from officials — forensic experts who work in these institutions. In the organizational plan, the rule of law means strict regulation of the activities of forensic institutions[2]. In our opinion, this is not entirely accurate. The activities of the expert institutions themselves, including the organizational, are quite diverse, and some of its directions cannot at all violate human rights and freedoms (for example, financial reporting). Compliance with the law of the activity of officials working in these institutions — the statement is quite fair. In our opinion, the principle of legality is that officials who are subjects of expert activity, are obliged to comply with the requirements of the law precisely in accordance with their content.

The principle of the independence of an expert should be understood as the absence of a task in any other person's activity. During his activity, the expert is directly in legal relationships with the management of the expert institution and the appointing bodies, or involve experts in other activities within their competence. In the scientific and practical comments to the Law of Ukraine *On Forensic Examination,* V. G. Goncharenko rightly noted that the independence of a judicial expert is guaranteed by the very existence of forensic expert institutions that are not part of the management of ministries and departments, which direct and provide operative search activities and functions of pre-trial investigation[3]. In cases of distrust of the expert examination made by an expert working in an institution belonging to a certain ministry, the parties to the trial (prosecution or defense) have the right to appoint a re-examination to an expert institution of another ministry, which is also a guarantee of the independence of the forensic expert and the correctness of his conclusion. In this same comment, VG Goncharenko notes

[1] *Ekspertyzy u sudovii praktytsi / za zah. red. V. H. Honcharenka* (2004) [Forensic examinations while legal proceedings / edited by V. H. Honcharenko]. Kyiv : Kyiv : Yurinkom Inter, p. 8 [in Ukrainian].

[2] Klymenko N. I. Papers mentioned above, p. 70.

[3] Forensic examinations in legal proceedings. P. 12.

that with such an interpretation of the commentary, more precise additional reservations are required that would guarantee both the formal (procedural) and the actual independence of the judicial experts of the "power", departments.

In our opinion, with regard to the Expert Service of the Ministry of Internal Affairs of Ukraine, such reservations exist and are clearly stated in the departmental regulations. The reform of the Ministry of Internal Affairs of Ukraine, which began in 2015 along with legislative changes, fundamentally changed the structure and operation of many of its departments and services. The Expert Service of the Ministry of Internal Affairs of Ukraine also experienced significant restructuring. By Order of the Ministry of Internal Affairs of Ukraine of 03.11.2015 № 1343 the Regulation on the Expert Service of the Ministry of Internal Affairs of Ukraine was approved, according to which its structural divisions are the State Research Experimental Forensic Center (SSRFC) and the territorial Scientific and Research Experimental Forensic Centers (SRFC), which are not part of the National Police, which has pre-trial investigation bodies. The main tasks of the Expert Service (paragraph 3 of the Order) is the implementation of forensic expertise, that is, the conduct of expertise. Consequently, the reform of the expert departments of the bodies of internal affairs took place, which finally divided the functions of the forensic and forensic expert support of the investigation, which contributed to the observance of the principle of independence of forensic examination from the bodies of pre-trial investigation.

The next principle of expert activity determines objectivity. This concept is philosophical, which means the characterization of an object, the meaning of knowledge or the mode of existence of reality, which consists in their independence from the consciousness of the subject of knowledge. Objectivity in relation to the characteristics of human activity can be defined as the ability of the subject to answer the question, regardless of personal preferences, attachments or benefits. The very concept of "objectivity", includes the notion of "independence". You cannot perceive the validity or conduct research objectively if a person is psychologically, morally, materially or otherwise dependent on anyone. That is, independence and objectivity can be regarded as a cause and effect. Independence of a judicial expert promotes the objectivity of his research and conclusions, and vice versa.

Some scholars invest in the principle under consideration their content. Thus, M. G Shcherbakovskyi objectively understands, firstly, that the objects are studied and described in the form in which the expert arrived, and secondly, the expert established by the signs, the circumstances set out in

writing in the conclusion, actually reflect the properties investigated objects[1]. The objectivity of the expert study, according to V. G. Goncharenko, is that the expert during the study is not related to the version of the party that appointed the examination. He establishes with the help of special knowledge all the circumstances of the case within the information contained in the objects under investigation[2]. With the above-mentioned theses, which do not contradict each other and characterize various aspects of the principle of objectivity, we agree.

Analyzing the content of the principles of independence and objectivity, the question arises as to the appropriateness of their separation. Objectivity in relation to expert activity is perceived rather not as a principle, but as a trait of the character of an expert or a component of his competence — the ability to solve issues that fall within his competence, using exclusively his own special knowledge, regardless of his own views or inclinations. In our opinion, the separation of the principle of objectivity in expert activities is superfluous.

The following principle, as stated in the Law of Ukraine "On Judicial Expertise", is the completeness of the research that scientists associate with the need to address the questions put to the expert and study all objects submitted for examination in full, using all possible existing, recommended for practical application of methods of expert research[3]. To answer the questions and describe the research carried out is the responsibility of the expert, which is specified in the legislative acts and specified in the research methods. Otherwise, no judicial expert, simply cannot act. It is also not necessary, in our opinion, to use all possible research methods, if some of them lead to the desired results. For example, if it is enough to handle fine-fingerprints to detect fingerprints, it's not necessary to use, say, a ninhydrin method. Regarding the completeness of the description of all methods of research in full, scholars also have discussions. A certain group of scholars expresses the opinion about the possibility of a shortened expert opinion. Principles, as noted earlier, are the starting points on which certain activities are based. Controversial provisions, as well as separate responsibilities of actors, in our opinion, do not need to be determined by principles.

A significant number of scholars indicate more principles than those specified in the Law. Emphasizing in a separate group the "procedural", principles, V. M. Galkin calls the following: the legality, completeness of expert research, the objectivity of the research, the universality of the results of the examination, the connection of the expert with the materials provided by the case, the activity of the expert, the separation of expert functions from

[1] Sherbakovskyi M. H. *Sudebnye jekspertizy: uchebno-teoret. posobie* (2005) [Forensic examinations. Educational and practical textbook]. Kharkov : Espada, p. 32 [in Russian].

[2] Forensic examinations in legal proceedings. P. 9.

[3] Klymenko N. I. Papers mentioned above, p. 70; 71.

other procedural functions ; procedural independence of the expert; personal responsibility of the expert for conducting the examination[1]. About the same list of principles is O. O. Zaitsev[2].

Most of the above-mentioned provisions cannot be called the principles of expert activity. They mainly reflect the foundations of procedural law (procedural independence and independence of the expert, separation of expert functions from the functions of other participants in the process, personal responsibility of the expert for the given conclusion) or personal qualities of the expert (activity). Such a principle as the universality of the results of the examination, in our opinion, is generally incorrectly formulated. The expert's conclusion is attached to the materials of the criminal proceedings, which are not always and not available to everyone — in the strict sense of the word "public availability". Considering this provision on the part of the availability and simplicity of the material presented in the conclusion for the parties to the process, it should be noted that sometimes this cannot be done by the expert, due to the complexity of the experiments conducted. Modern expert methods and technical means used in research are sometimes quite complex and cannot be described in a common language.

N. I. Klymenko adds to the principles of legality, independence, comprehensiveness and completeness of research, purposefulness, planning, systematic viewpoint[3]. The latest principles really should take place. But it is rather not the principles, but the characteristics of expert activity. In addition, they are of great significance and are inherent not only in expert but also in any kind of practical activity.

Along with the mentioned, as the principles of forensic expert activity, M. H. Sherbakovskyi mentions the competence of an expert; the possibility of verifying the expert's conclusions by an investigator or an informed person; the interaction of the investigator, the head of the expert institution, the expert, members of the commission of experts; observance of safety and rights of the person during conducting of expert research[4]. These provisions cannot be called the principles of all expert activities. This is the characteristics of its individual moments. Competence is a prerequisite for engaging an expert and characterizes his knowledge and professionalism. Interaction — simple coherence of the actions of participants in the process. It may be worse or better, but without it, it will not be the process itself. Incidentally, the interaction of the participants in the process, in turn, is based on certain principles.

[1] Halkyn V. M. (1970) *O principah sudebnoj jekspertizy po ugolovnym delam. Sb. nauch. tr. CNIISJe* [On the Principles of Forensic Examination in Criminal proceedings. Collection of scientific papers]. Moscow, Issue 2. P. 77–78 [in Russian].

[2] Zaitseva E. A. (2003) *Pravovoj institut sudebnoj jekspertizy v sovremennyh uslovijah* [Theory and practice of Forensic Science in modern conditions]. Volgograd : Publishing house of Volgograd University, p. 15–19 [in Russian].

[3] Klymenko N. I. Papers mentioned above, p. 69–71.

[4] Sherbakovskyi M. H. Papers mentioned above, p. 31; 32.

After analyzing the principles of forensic expert activity indicated in the Law of Ukraine *On Judicial Examination* and the opinions of scientists, it can be concluded that the most significant of them are legality and independence. We agree with the opinion of V. T. Malyarenko, who, in relation to the principles of criminal justice, noted that "more principles, the less their significance, the more their blurriness"[1]. There is also a question about the expediency of consolidating the principles of expert activity in legislative acts. We agree with L. M. Loboiko that the definition of the concept of principles (principles) of criminal justice and their system should lie within the scope of scientific activity. For criminal procedural legislation, it is important that the rights and freedoms defined by the Constitution of Ukraine and international legal acts can be implemented in the field of legal proceedings. And for this purpose, it is important to correctly process the rules in accordance with the provisions of the Constitution of Ukraine[2]. In our opinion, Art. 3 of the Law of Ukraine *On Judicial Examination* is unnecessary. The principle of legality is enshrined in the Constitution of Ukraine, procedural norms of expert activity are set out in many of the codes and laws of Ukraine, including Art. 2 of this Law. 2 of this Law). The guarantees of the independence of a forensic expert are clearly set out in Art. 4 of the Law. Duplication is not necessary in this case.

ПРИНЦИПИ СУДОВОЇ ЕКСПЕРТИЗИ

І. В. Пиріг, І. Р. Шинкаренко

На основі аналізу думок науковців сформульовано принципи судової експертології як самостійної науки, що є основою судово-експертної діяльності. Виокремлено принципи судово-експертної діяльності, визначено їх співвідношення з принципами науки. Розкрито зміст кожного з принципів і надано власне розуміння доцільності їх застосування.

Ключові слова: судова експертологія, судово-експертна діяльність, принципи, об'єктивність, детермінізм, законність, незалежність.

ПРИНЦИПЫ СУДЕБНОЙ ЭКСПЕРТИЗЫ

И. В. Пирог, И. Р. Шинкаренко

Анализ мнений ученых позволил сформулировать принципы судебной экспертологии как самостоятельной науки, которая является основой судебно-экспертной деятельности. Выделены принципы судебно-экспертной деятельности, определено их соотношение с принципами науки. Раскрыто содержание каждого

[1] Maliarenko B. T. (1999) *Poniattia, zahalna kharakterystyka ta klasyfikatsiia osnovnykh zasad kryminalnoho sudochynstva. Visn. Verkhov. Sudu Ukrainy* [Concept, general description and classification of the basic principles of criminal justice. Bulletin of Supreme Court of Ukraine]. № 1. P. 43 [in Ukrainian].

[2] Loboyko L. M. (2010) *Reformuvannia kryminalno-protsesualnoho zakonodavstva v chastyni rehlamentatsii pryntsypiv kryminalnoho protsesu. Nauk. visn. Dnipropetr. derzh. un-tu vnutr. sprav : zb. nauk. prats* [Reform of criminal procedural legislation as part of the regulation of the principles of the criminal process. Scientific bulletin of the Dnipropetrovsk State University of Internal Affairs : Collection of scientific papers]. № 2(48). P. 22 [in Ukrainian].

из принципов и представлено собственное понимание целесообразности их применения. Основными принципами судебной экспертологии являются детерминизм, объективность и системность. Принцип детерминизма, который охватывает принцип историзма состоит в изучении предмета судебной экспертологии с точки зрения диалектических закономерностей взаимосвязи и взаимообусловленности процессов, которые возникают при проведении экспертного исследования. Принцип объективности состоит в установлении закономерностей судебной экспертологии исключительно на основании исследования объектов с использованием специальных знаний, независимо от социальных, политических и других процессов, которые происходят в обществе. Системность судебной экспертологии, как и любой другой науки, состоит в рассмотрении отдельных ее составных как единого целого, систему знаний. На основе анализа законодательства и научных мнений, авторами определено, что принципами судебно-экспертной деятельности также являются законность и независимость. Принцип законности заключается в том, что должностные лица, которые являются субъектами экспертной деятельности, обязаны выполнять требования законодательства в точном соответствии с их содержанием. Принцип независимости эксперта следует понимать как отсутствие вмешательства в его деятельность любых других лиц. Анализируя принципы судебной экспертизы, авторы приходят к выводу о ненужности фиксации принципов экспертной деятельности в законодательных актах, а именно, в ст. 3 Закона Украины «О судебной экспертизе». Принцип законности заложен в Конституции Украины, процедурные нормы деятельности эксперта разъяснены во многих кодексах и законах Украины. Лишнее дублирование в этом случае является ненужным.

Ключевые слова: судебная экспертология, судебно-экспертная деятельность, принципы, объективность, детерминизм, законность, независимость.

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ON DEFINING THE CONCEPT OF FORENSIC SCIENCE IN ADMINISTRATIVE PROCEEDINGS

Definition features of Forensic Science are investigated, its essence and content are outlined in administrative proceedings. The most stable points of view on the essence of the concept of "expertise", provided in encyclopedic publications, are analyzed, compared with those contained in the current normative legal acts and those supported by modern legal science. Forensic examination in administrative proceedings is considered as a legal institution, as a system of procedural relations and as a system of procedural

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actions, each of which is only another level of specification of this phenomenon.

Keywords: expertise, research, administrative proceedings, procedural form, procedural relations, expert, business.

Contemporary legal proceedings consider expert examination as one of the most powerful tools for establishing truth in litigation. In turn, the use of the expert's conclusions determines the degree of legality of the decision, protection against possible errors: in the proof — the receipt of new evidence, verification of other evidence, the formation of complexes of evidence; in a tactical plan — nomination and verification of versions, simulation of the mechanism of the offense. That is why in court proceedings the role of special knowledge is constantly increasing progressively.

In procedural science, the study of problems of proof, including expertise, was given a lot of attention. This issue was dealt with in the writings of domestic and foreign scholars of criminal procedural, civil procedure, economic-procedural, administrative law and legal proceedings. Although the general understanding of the essence of the procedural forms of the use of special knowledge in the administrative, criminal, civil proceedings has been achieved, the unity of views regarding the use of the concept of special knowledge has not been achieved; the problems associated with the involvement of an expert, specialist, borders "of their use of special knowledge and some others.

Definition of the concept of expertise, clarification of its legal content was paid to many lawyers who conducted research in the areas of criminal procedural, civil procedural law and administrative justice. These issues are addressed in the light of the problems of judicial evidence in dissertation research and specialist work[1]. However, in general, until now, in the process of science, there is no controversy over the definition of the concept of forensic examination, the definition of its essence and content in administrative proceedings.

The purpose of the work is to analyze the peculiarities of the definition of the concept of forensic expertise, to define its essence and content in administrative proceedings.

[1] Bychkova S. S. (2003) *Ekspertyza v tsyvilnomu protsesi: dys. ... kand. yuryd. nauk* [Examination in the civil process : Candidate of science dissertation]: spec. 12.00.03. Kyiv, p. 177, Koldyn V. Ya. (2000) *Jekspertiza v upravlenii i prave. Visnik Lugans'k. in-tu vnutr. sprav* [Forensic Science in management and law]. Bulletin of Luhansk State University of Internal Affairs Luhansk, p. 176–200; Lapta S. P. (2006) *Pravovi ta naukovi osnovy vykorystannia sudovykh ekspertyz pry rozsliduvanni zlochyniv: dys. ... kand. yuryd. nauk* [Legal and scientific basis for using forensic examinations in the investigation of crimes : Candidate of science dissertation]: spec. 12.00.09. Kharkiv, p. 227 [in Ukrainian].

It should be noted that the concept of "forensic examination", was included in the scientific and practical circulation not only as a legal procedural term. It is widely used in conducting various scientific, technical and other research, the execution of which is impossible without special knowledge. Definition of the concept of expertise in administrative proceedings, its legal nature has theoretical and practical significance, since the correct solution to this issue also determines the correct establishment of the procedure and limits of the application of expertise in the administrative process.

The term "forensic examination", has at the same time two roots, since it comes from the Latin "expertus", and from the French "expertise", which means: 1) experienced; 2) tested[1]. This suggests that any examination, first of all, is the use of special knowledge and those who have passed the testing experience.

In the Great Explanatory Dictionary of Modern Ukrainian, the examination is interpreted as a consideration, study of a case, a question with a view to making a legal opinion, to give a legal assessment of the relevant phenomenon[2].

The term "forensic examination", means that it does not imply any examination, but one that is used in the trial (administrative, civil, criminal, etc.). A characteristic feature of the process is a fairly strict procedural form — as a way of its existence. That is why in the legal encyclopedic dictionaries the phrase "judicial expertise", is considered to be a study that is conducted by the expert in the manner prescribed by the procedural law, for the establishment of facts and circumstances based on the materials of the court case.

The legal terminology reference forensic examination is defined by the expert, as regulated by the procedural law, on the basis of special knowledge of the specific circumstances of the court case in order to establish the facts that are essential for the determination of objective truth in the case[3].

In the Great Encyclopedia Legal Dictionary, forensic expertise is interpreted as a specialist-expert study of material objects, phenomena and processes that contain information about the circumstances of a case that is under investigation by the bodies of inquiry, pre-trial and judicial investigation[4].

[1] *Yurydychna entsyklopediia / pid red. Yu. S. Shemshuchenka* (1999) [Legal Encyclopedia / edited by Yu. S. Shemshuchenko]. Kyiv : Ukrainian Encyclopedia, V. 2. P. 333 [in Ukrainian].

[2] *Velykyi tlumachnyi slovnyk suchasnoi ukrainskoi movy / ukl. i hol. red. V. H. Busel* (2004) [Great explanatory dictionary of modern Ukrainian language / Compiler and Editor-in-chief V. H. Busel]. Kyiv; Irpin : Perun, Publishing House, p. 257 [in Ukrainian].

[3] Holovchenko V. V. Kovalskyi V. S. (1998) *Yurydychna terminolohiia : dovidnyk* [Legal terminology: guide]. Kyiv : Kyiv : Yurinkom Inter, p. 164 [in Ukrainian].

[4] *Velykyi entsyklopedychnyi yurydychnyi slovnyk / za zah. red. Yu. S. Shemchushenka* (2007) [Great encyclopedic legal dictionary / edited by Yu. S. Shemshuchenko]. Kyiv : Yrid. dumka, p. 745.

In general, from the above definitions, the term "forensic examination", is considered, first of all, as a study carried out by a subject of procedural activity — an expert, in order to establish facts that are essential for the solution of a particular legal case.

Since the encyclopedic editions give the most established point of view regarding the essence and content of the category under study, it will be possible to compare it with those presented in the current normative legal acts. Matters related to the appointment and conduct of forensic examinations are regulated by the Law of Ukraine *On Judicial Examination*, procedural legislation, etc. In Ukraine, legislative acts are adopted that regulate the conduct of various types of expertise. These include the Laws of Ukraine: *On Judicial Examination, On Scientific and Scientific and Technical Expertise, On Veterinary Medicine*, and others like that. That is why the study of the concept of expertise is expedient to continue the analysis of legislative acts, which in general form the legal definition of the concept of expertise.

The Law of Ukraine *On Judicial Examination* in Art. 1 determines the examination (judicial) as a research on the basis of special knowledge in the field of science, technology, art, crafts, etc. objects, phenomena and processes in order to provide an opinion on matters that are or will be subject to judicial review[1].

According to Art. 1 of the Law of Ukraine *On Scientific and Scientific and Technical Expertise* (scientific and scientific-technical) is an activity whose purpose is to research, test, analyze and evaluate the scientific and technical level of objects of expertise and to prepare substantiated conclusions for making decisions on such objects[2].

In Art. 1 of the Law of Ukraine *On Veterinary Medicine* states that the examination (veterinary and sanitary) is a complex of necessary laboratory and specialist research (biological, bacteriological, chemical-toxicological, pathologic-anatomical, histological, parasitological, radiological) conducted by specialists of the civil service veterinary medicine or official veterinarians, regarding the safety of animal products, and on the agro-food markets — and plant origin, reproductive material, biological products, veterinary preparations, substances, feed additives, premixes and feed, including analysis of production technology and manufacturing equipment for compliance with veterinary and sanitary measures[3].

[1] *Pro sudovu ekspertyzu : Zakon Ukrainy* [On Judicial Examination Law of Ukraine] dated on 25.02.1994 № 4038–XII. Bulletin of Verkhovna Rada of Ukraine 1994. № 28. Art: 232 [in Ukrainian].

[2] *Pro naukovu i naukovo-tekhnichnu ekspertyzu : Zakon Ukrainy* [On Scientific and Scientific and Technical Expertise : The Law of Ukraine] dated on:10.02.1995 № 51/95–BP (with changes and annexes). Bulletin of Verkhovna Rada of Ukraine. 1995. № 9. Art: 56 [in Ukrainian].

[3] *Pro veterynarnu medytsynu : Zakon Ukrainy* [On Veterinary Medicine : Law of Ukraine] dated on: 25.06.1992 № 2498–XII (with changes and annexes). Bulletin of Verkhovna Rada of Ukraine 1992. № 36. Art: 531 [in Ukrainian].

From the above legislative definitions, it follows that the expertise is understood, first of all, research. The Laws of Ukraine *On Scientific, Scientific and Technical Expertise*", and *On Veterinary Medicin*e also separate the analysis, and the Law of Ukraine *On Scientific and Scientific and Technical Expertise* also includes verification and evaluation. Convinced that the terms "analysis", "evaluation", and "verification", are part of the process of conducting research, so it is inappropriate to allocate them in defining the concept of "expertise".

When analyzing domestic legislation in this area, it is also necessary to draw attention to the Law of Ukraine "On Judicial Expertise", the preamble of which states that it "defines the legal, organizational and financial foundations of forensic expert activity in order to ensure the administration of justice of Ukraine independent, qualified and objective an expert-oriented, focused on maximizing the use of science and technology achievements. Concerning the notion of forensic examination, enshrined in this Law, it should be noted that the said phrase has become the procedural term. At the same time, despite the list of changes made to this normative legal act in recent years, terminological unity has not been achieved. In addition, the notion of forensic examination contained in the Law of Ukraine *On Judicial Examination* has a significant disadvantage, since it does not fully reflect the essence of forensic examination as a way of obtaining evidence in a case.

As to the content of the concept of expertise in legal science, there is also no single opinion. The procedural theory is based on law and judicial practice, first of all, it tries to outline the notion of forensic examination not only as a legal institution, but also as one based on the unlimited possibilities of other sciences. In general, expertise is understood by the expert's research of specific objects requiring specialist knowledge in various fields, for example, medical examination, economic expertise, forensic examination.

In legal scholarly literature, there is the notion that the concept of "judicial expertise", has several meanings. First, as a study of the circumstances of the case, conducted by an informed person, to give an opinion on issues of interest to the court and require for their solution of special knowledge in the field of science, technology, art or professional experience. Second, as a set of procedural actions aimed at obtaining evidence — the expert's conclusion. Thirdly, as a system of institutions conducting expert examinations[1].

It is difficult to agree with this approach. Yes, it remains unclear why the definition of expertise is provided through procedural actions. After all, under procedural actions are understood actions, the procedure of implementation

[1] Shliakhov A. R. *O predmete i sisteme teorii sudebnoj jekspertizy. Voprosy sudebnoj jekspertizy* [On the subject and the system of the theory of forensic examination. Issues of Forensic Medical Examination]. Tbilisi, p. 12 [in Russian].

of which is regulated by the norms of the law, however, this law does not regulate the procedure for the implementation of the expert in the process of conducting the study. Such expert actions are determined by special rules developed by science, knowledge of which is used during the research. However, it is inadmissible to disconnect the procedural actions of the court and the persons involved in the case from the organization of expertise from the examination itself as a process of investigation by the expert of the circumstances of the case, since these procedural actions form the procedural form of appointment of the examination.

It is hardly possible to support the thesis that the system of institutions can be called an examination. So, Art. 7 of the Law of Ukraine "On Forensic Examination", establishes: forensic-expert activity is carried out by state specialized institutions and departmental services. Therefore, it is not advisable for persons conducting research to be called an examination. One cannot speak, for example, about the management of expertise, the organization of expertise, referring to expertise as a system of institutions, since in this case it is possible to assume an unjustified mix of concepts.

The most prudent is the definition of the concept of forensic examination as a special study appointed by a court (judge) ruling in the presence of a general (procedural) and special reason and conducted by a knowledgeable expert-expert in a certain procedural form for obtaining judicial evidence in the case (expert's conclusion)[1].

This position is supported by other modern lawyers, considering judicial expertise as the study of certain factual circumstances of the case, conducted on the basis of a court order by a person who has special knowledge in the field of science, art, technique, crafts, etc., and has a special procedural status (is an expert), as a result of which a new means of proof is created — the expert's conclusion[2].

Another approach to the definition of the essence of the examination was proposed by L. Ohanyan. In particular, as the scientist emphasizes, the essence of the examination is determined not by the expert's report of the results of scientific expert research, but by the fact of the expert's use of the known scientific approach in the process of a specific study, on the basis of which the expert comes to the corresponding scientifically substantiated conclusions[3].

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[1] Sakhnova T. V. (2000) *Sudebnaja jekspertiza : uchebnik* [Forensic science : manual]. Moscow : Grodets, p. 47 [in Russian].

[2] *Tsyvilnyi protsesualnyi kodeks Ukrainy: naukovo-praktychnyi komentar / S. S. Bychkova, Yu. V. Bilousov, V. I. Biriukov ta in.; za zah. red. S. S. Bychkovoi* (2008) [Criminal Procedure Code of Ukraine: scientific and practical comment / S. S. Bychkova, Yu. V. Bilousov, V. I. Biriukov and others. edited by S. S. Bychkova]. Kyiv : Atika, p. 328 [in Ukrainian].

[3] Ohanyan L. (1970) *Osnovnye polozhenija kriminalisticheskoj jekspertizy pis'ma, primenitel'no k rukopisjam, vypolnennym na armjanskom jazyke: avtoref. dis. … kand. jurid. nauk* [The main provisions of the forensic examination of the letter, concerning the manuscripts executed in the

M. G. Shcherbakovskyi makes a determination of forensic examination from the point of view of conducting a forensic expert with the use of special knowledge and in accordance with the law of research provided by the competent authorities (person) for the purpose of establishing the factual data in the case, which is reflected in the expert's opinion that is independent kind of evidence[1].

The advantage of this definition, in contrast to previous interpretations of the concept of forensic examination, is the indication of such a feature of expertise that distinguishes it from all other forms of the use of special knowledge in the trial, namely that the expert's conclusion is an independent form of evidence. That is, according to the results of the study, the expert formulates the conclusion (inference), which sets out the actual evidence supporting the case. The expert's conclusion is a professional assessment of the facts discovered in the study. During the expert research, the expert solves the practical task and receives new knowledge about the circumstances of the case, which did not exist prior to the research.

Taking into account the above and the norms of the current legislation, which regulate forensic activities, in our opinion, it is expedient to make such a definition of the concept of forensic examination: forensic examination is a person who possesses special knowledge and has a special procedural status (is an expert), on the basis of a court order or an authorized body (official), the study of certain facts and factual circumstances of the case in order to obtain new factual data as a result of the study and the message of the information that matters to the case, drawn up by a special document — the expert's conclusion.

The development of forensic examination testifies to the establishment and existence of an appropriate legal institution. The legal institute of Forensic Science regulates the legal relationship that arises when investigating and administering the judicial process in obtaining evidence — the expert's opinion[2].

In legal literature, it has recently been stated that forensic expertise is an independent, integrated legal institution that regulates, on the one hand, the activities of an expert in criminal, civil and commercial processes, the legal nature of his conclusion, and, on the other, the appointment of an expert examination, as well as the relation of law enforcement bodies and other participants of the case to the expert and his conclusion[3]. Moreover, the role

Armenian language : extended abstract of Candidate of Science]: spec. 12.717. Odessa, p. 23 [in Ukrainian].

[1] Sherbakovskyi M. H. (2008) *Sudova ekspertolohiia: navch. posibnyk* [Forensic Expertology : textbook]. Kharkiv : Publisher: Kharkiv National University of Internal Affairs, p. 13 [in Ukrainian].

[2] Zaitseva E. A. (2003) *Pravovoj institut sudebnoj jekspertizy v sovremennyh uslovijah* [Legal institute of forensic science in modern conditions]. Volgograd : Publishing house of Volgograd University, p. 6; 7 [in Russian].

[3] Klymenko N. I. Bilenchuk P. D. (2002) *Sudova ekspertyza v rozsliduvanni komp'iuternykh zlochyniv yak forma vykorystannia spetsialnykh znan. Teoriia ta praktyka sudovoi ekspertyzy i*

of the institution of forensic examination in modern conditions in the process of proving significantly increases[1].

As to the forensic examination in the administrative process, it should be noted that it is also one of the varieties of expertise, which has certain features, defined in the procedural law, namely, the *Code of Administrative Proceedings of Ukraine*. A characteristic feature of the administrative process is a rather rigid administrative-procedural form, that is, a set of rules of the administrative process, which regulate the implementation of justice in administrative cases, the procedure for the implementation of procedural actions by each of the subjects of the process in a strictly defined sequence. In other words, in the administrative process, as in other types of legal process, only what is regulated by the rules of procedural law is possible.

Consequently, the examination in an administrative court exists insofar as it is determined by the norms of the CAS Ukraine. The combination of the latter is a prerequisite for the emergence of administrative-procedural legal relations regarding the examination in the administrative process, and, consequently, the concrete actions of certain actors in the process associated with the appointment and conduct of the examination, using its results for evidence purposes. That is why it is advisable to define judicial expertise as a legal institution, which is a legally distinct set of naturally related homogeneous and one-to-one laws in the area of administrative-procedural norms aimed at the administration of justice.

If you set the scope of the norms united in the institute, one can identify the features of the examination institute in the administrative process, that is, determine the subject of regulation. Under the subject of legal regulation in the theory of procedural law is traditionally understood social relations, regulated by the rules of law, and, accordingly, become the form of legal relations[2]. Thus, forensic expertise can also be defined through the totality (system) of procedural relations.

The basis of the emergence of administrative-procedural relations on the conduct of the examination are certain legal facts. In this case, the main legal fact is the decision of the court (judge) on the appointment of the examination. In the legal literature it is indicated that the conduct of the examination may be initiated both by the persons involved in the case and the court. However, from the legal requirements of Part 1 of Art. 102 of *The Code of Administrative Proceedings of Ukraine* implies that the appointment of the expert examination is finally assigned to the discretion of the court, which

kryminalistyky : zb. materialiv mizhnarod. nauk.-prakt. konf. [Forensic examination of computer crimes as a form of use of special knowledge. Theory and Practice of Forensic Science and Criminalistics Content Sci. Conf.]. Kharkiv : Pravo, Issue 2. P. 62 [in Ukrainian].

[1] Rossinskaya E. R. (2005) *Sudebnaja jekspertiza v grazhdanskom, arbitrazhnom, administrativnom i ugolovnom processe* [Forensic examination in civil, arbitration, administrative and criminal proceedings]. Moscow : Norma, p. 6 [in Russian].

[2] Lukianova E. H. (2003) *Teorija processual'nogo prava : ucheb. posobie* [The theory of procedural law : tutorial]. Moscow : Norma, p. 50 [in Russian].

makes a decision on the petition of the participant in the case or on its own initiative to appoint an expert examination in the case. However, along with this, the law provides for the possibility of conducting an expert examination on the order of the participants of the case (Article 104 of the Code of Administrative Proceedings of Ukraine) when a party to a case has the right to sue the expert opinion drawn up on his order.

The current administrative-procedural law contains a provision according to which it is established that a separate document sets out the decision on the appointment of an examination (Article 103 of the Code of Administrative Proceedings of Ukraine). That is, the result of the actions on the appointment of the examination is reflected in a special procedural act — a court decision on its appointment. Without such a procedural document that mediates the actions of a judge, the emergence of procedural relations regarding the examination is impossible. The content of these procedural relations is primarily the concrete actions of the subjects of the administrative process. Consequently, it is possible to define judicial expertise and as a system of certain procedural actions.

Forensic examination as a legal institution, as a system of procedural relations and as a system of procedural actions — all this is only a variety of levels of concretization of this phenomenon as a legal one. Outside the procedural "envelope", forensic expertise does not exist; outside the administrative-procedural form, it is impossible to obtain an expert's conclusion as a judicial proof, and the violation of any procedural norm in appointing, conducting an examination, evaluating an expert's opinion devalues the evidentiary significance of the latter, regardless of its content.

Thus, the expert's conclusion as an independent form of judicial evidence may be the result of only forensic examination, that is, that which was appointed and conducted after the violation of the administrative case in accordance with the norms of the CAC of Ukraine. Any other expert opinion obtained outside the administrative process, without observance of the requirements of the administrative-procedural form, does not obtain the status of the expert's conclusion and cannot be used as evidence in the trial.

It can be stated that forensic examination in the administrative process is, first of all, an independent legal institution, that is, a set of norms of administrative procedural law governing the administrative-procedural legal relationship regarding the appointment and conduct of expertise, the receipt and evaluation of the expert's conclusion. These norms are implemented through a certain system of administrative-procedural legal relations that arise between the administrative court, the participants in the administrative process and the expert as a result of certain procedural actions. Specifying the legal definition of the examination, it can be argued that it also represents a set of special procedural actions strictly regulated by law and aimed at obtaining judicial evidence — an expert opinion.

Taking into account the above-mentioned signs, one can define the forensic examination in the administrative process, which includes its legal and cognitive aspects: judicial expertise in the administrative process should be understood as the study of certain factual circumstances of an administrative case that is conducted on the basis of an administrative court's decision by a special entity (person), possessing special knowledge in the field of science, art, technique, crafts, etc., resulting in the creation of a new means of proof — the expert's conclusion.

ДО ПИТАННЯ З ВИЗНАЧЕННЯ ПОНЯТТЯ СУДОВОЇ ЕКСПЕРТИЗИ В АДМІНІСТРАТИВНОМУ ПРОВАДЖЕННІ

О. П. Снігерьов*, *С. О. Андренко

Досліджено особливості визначення поняття «судова експертиза», окреслено її сутність і зміст в адміністративному провадженні. Проаналізовано найбільш усталені точки зору на сутність поняття «експертиза», що надаються в енциклопедичних виданнях, здійснено порівняння їх із тими, що містяться в чинних нормативно-правових актах і тими, які підтримуються сучасною юридичною наукою. Судова експертиза в адміністративному провадженні розглядається як правовий інститут, як система процесуальних відносин і як система процесуальних дій, кожна із яких є тільки іншим рівнем конкретизації цього явища.

Ключові слова: експертиза, дослідження, адміністративне провадження, процесуальна форма, процесуальні відносини, експерт, справа.

К ВОПРОСУ ОПРЕДЕЛЕНИЯ ПОНЯТИЯ СУДЕБНОЙ ЭКСПЕРТИЗЫ В АДМИНИСТРАТИВНОМ ПРОИЗВОДСТВЕ

А. П. Снигерев*, *С. А. Андренко

Исследованы особенности определения понятия «судебная экспертиза», очерчены ее сущность и содержание в административном производстве. Авторами подчеркнуто, что определение понятия экспертиза в административном производстве и описание ее юридической природы имеет теоретическое и практическое значение, поскольку правильное решение этого вопроса обуславливает и правильное установление порядка и границ применения экспертизы в административном процессе. Проанализированы наиболее известные формулировки понятия «экспертиза», которые содержатся в энциклопедических изданиях, осуществлено сравнение их с представленными в действующих нормативно-правовых актах и теми, что поддерживаются современной юридической наукой. В результате рассмотрения судебной экспертизы как правового института, как системы процессуальных отношений и как системы процессуальных действий констатировано, что это все только разнообразные уровни конкретизации этого явления, как правового. Обращено внимание на то, что вне процессуальной «оболочки» судебная экспертиза не существует, за границами административно-процессуальной формы нельзя получить заключение эксперта как судебное доказательство, а нарушение любой из процессуальных норм при назначении, производстве экспертизы либо оценке заключения эксперта, обесценивает значимость этого заключения вне зависимости от его содержания. Доказано, что судебная экспертиза в административном процессе — это, прежде всего, самостоятельный правовой институт, то есть совокупность норм административно-процессуального права, которые регламентируют административно-процессуальные отношения в аспекте назначения, проведения, получения и оценки

заключения эксперта. Авторы обращают внимание на то, что указанные нормы реализуются через административно-процессуальные отношения, которые возникают между административным судом, участниками административного процесса и экспертом в результате совершения определенных процессуальных действий. Кроме того, экспертиза также представляет собой совокупность особенных процессуальных действий, жестко регламентированных законом и направленных на получение судебного доказательства — заключения эксперта.

Ключевые слова: экспертиза, исследование, административное производство, процессуальная форма, процессуальные отношения, эксперт, дело.

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FORMS OF USE OF SPECIAL KNOWLEDGE

The problem issues concerning the forms of use of special knowledge in the investigation of crimes are investigated. The laws and opinions of leading scientists in this regard are analyzed. An attempt has been made to provide suggestions on the use of individual forms.

Keywords: special knowledge, procedural and non-procedural, direct and indirect, basic and optional forms of use of special knowledge, appointment of forensic examinations, participation of a specialist in investigative actions, reference and consulting form, accounting, audits.

In connection with the numerous reform processes taking place in the law-enforcement, judicial and other spheres of public life, the question of the use of special knowledge is still debatable. Despite the fact that the current Criminal Procedure Code of Ukraine (hereinafter referred to as the CPC of Ukraine) is constantly undergoing changes and improvements, some aspects remain unresolved and need to be finalized, namely: interaction of experts with representatives of other services; preparation of materials for appointment of examinations; involvement of narrow-profile specialists in investigative actions; functioning of forensic accounting, etc.

Analysis of scientific research and publications, **which initiated the solution to this problem.** Such scientists as T. V. Averyanova, L. Yu. Arocker, V. P. Bakhin, R. S. Belkin, V. D. Bernas, A. I. Wienberg, A. F. made a

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significant contribution to the study of this problem. Volobuyev, V. G. Goncharenko, G. I. Gramovich, A. V. Ishchenko, N. I. Klymenko, V. O. Konovalova, Yu. G. Korukhov, V. S. Kuzmichov, V. K. Lisichenko, V.G. Lukashevich, E. D. Lukianchikov, O. R. Rossinskaya, MV Saltevsky, M. Ya. Sega, I. Ya. Friedman, V. Yu. Shepitko, O. R. Shlyakhov, M. H. Shcherbakovskyi and others. Recently, this problem has been studied by L. M. Holovchenko, I. V. Pyrih, E. B. Simakova-Yefremian, and others. At the same time, the question of the forms of use of special knowledge is needed in more detail. This is due to changes in procedural legislation and current needs of practice, in particular, regarding the appointment of expertise only by the court, the involvement of employees of specialized institutions as specialists for conducting investigative actions, etc.

The **purpose** of the article is to identify the most important forms of using special knowledge in the investigation of crimes and to indicate the problematic aspects of their application.

On the basis of the generalization of the opinions of criminologists, we note that the concept of special knowledge as a whole has its broad and multifaceted interpretation among scholars. Considering the definition of "special knowledge", as being used in the field of combating criminal activity, namely in the criminal, criminal, procedural and criminalistics aspects, it can be noted that they: 1) constitute a complex of knowledge and skills in various fields; 2) consist of a system of information in the field of science, technology and other spheres of human activity; 3) are used in pre-trial investigation and court proceedings in cases and in accordance with the procedure established by the criminal procedural law; 4) their use is carried out in conjunction with scientific and technical means; 5) are realized by a definite subject of criminal justice in the process of practical activity, special training taking into account professional experience and based on the system of theoretical knowledge in the relevant field; 6) As a rule, their implementation requires considerable time and intellectual effort; 7) contribute to the development of technical means and methods of working with evidence and the establishment of important circumstances that are relevant for the proof.

Hence, special knowledge is the scientific, technical and other professional knowledge gained as a result of learning, as well as the skills acquired in the process of work in certain areas of practice, which are used together with the application of scientific and technical means for the collection and investigation of traces of crime in order to Obtaining evidentiary and guiding information needed to investigate crimes.

When investigating any crime, special knowledge is used in different forms and forms. At the legislative level, there is no definition of the concept of special knowledge and its forms. In forensic literature, too, there is no single point of view on this issue, but it is noted that the forms of using special

knowledge during the pre-trial investigation are much wider than those provided for in the law. Scientists pay attention to the structure, essence, purpose of using special knowledge and their application at different stages of the criminal process in various forms, classifying them on various grounds.

Depending on subjects possessing special knowledge, M. V Saltevskyi distinguishes between direct and indirect forms of special knowledge. In direct form, subjects at different stages of the investigation use technical means and specialist knowledge, such as investigator, prosecutor, investigating judge. In the mediated form, when subjects for any reason cannot use the technical means to detect or fix, study material sources of information, they consult a specialist, receive consultations from him, invite to participate in investigative actions or instruct to conduct a judicial examination. Consequently, the investigator applies special knowledge and technical means for studying sources of information in the form of expert participation in investigative actions or the appointment of forensic examinations[1].

O. R. Rossinskaya notes that special knowledge can be used both in procedural form, when the results of their application are of probative value, and in the non-procedural[2].

Differentiate the procedural forms of application of special knowledge on obligatory and optional during the conduct of procedural actions M. H. Shcherbakovskyi and O. A. Kravchenko[3]. The non-use of special knowledge in case of compulsory application is considered as a significant procedural violation, which entails the loss of the probative value of the results of these actions. In addition, the procedural forms of the use of special knowledge are divided by the nature of the actions in which they are used, on investigations and other procedural actions.

Thus, according to H. I. Hramovych, existing forms of using special knowledge are closely interrelated, based on common principles aimed at achieving a common goal. Therefore, the combination of these forms should be considered as a system consisting of elements that are interconnected and create a single whole. The scientist divides them into: specified and regulated by the criminal-procedural code; indicated but not regulated by the Code of Criminal Procedure; the form of the use of special knowledge is not specified or regulated by law[4].

[1] Saltevskyi M. V. (2005) *Kryminalistyka (u suchasnomu vyhliadi) : pidruchnyk* [Criminalistics (in modern edition) : textbook]. Kyiv : Condor, p. 82 [in Ukrainian].

[2] Rossinskaya E. R. (2008) *Sudebnaja jekspertiza v grazhdanskom, arbitrazhnom, administrativnom i ugolovnom processe. 2-e izd., pererab. i dop.* [Forensic examination in civil, arbitration, administrative and criminal proceedings. 2nd ed. revised supplemented]. Moscow : Norma, p. 7 [in Russian].

[3] Shcherbakovskyi M. H. Kravchenko A. A. (1999) *Prymenenye spetsyalnykh znanyi pry raskrytyy y rassledovanyy prestuplenyi* [Application of special knowledge in the disclosure and investigation of crimes]. Kharkov : Yuniversity of Internal Affairs, p. 10 [in Russian].

[4] Hramovych H. I. (1987) *Taktika ispol'zovanija special'nyh znanij v raskrytii i rassledovanii prestuplenij : ucheb. posobie* [Application of special knowledge in the disclosure and investigation of crimes : tutorial]. Minsk: VSH MVD SSSR, p. 15 [in Russian].

The same view also O. A. Kravchenko, who notes that the cognitive nature of the process of disclosure and investigation of crimes determines the possibility of applying special knowledge, depending on the probative value of the results of their application in such basic forms — procedural and non-procedural. But the author suggests to allocate such forms of application of special knowledge:

1) specified and regulated by the Criminal Procedure Code (participation of a specialist in conducting investigative and judicial actions, conducting an examination);

2) specified but not regulated by the CPC of Ukraine (revision);

3) not specified and not regulated by law (departmental audits and investigations, preliminary investigations of material traces of a crime, advisory assistance of specialists outside of investigative actions)[1].

In modern conditions, taking into account changes in the criminal procedural law, consultations provided for in Art. 71 CPC of Ukraine, it is necessary to attribute to the first form.

Some scholars use classification in different classifications. Thus, according to O. V. Vakanych, the main forms of the use of special knowledge can be attributed to: Thus, according to O. V. Vakanych, the main forms of the use of special knowledge may include: 1) the direct use of special knowledge by the investigator, investigator, judge, court, prosecutor (Articles 22; 40; 46; 91; 92; 93; 94; 214; 223; 228; 236; 237; 238; 239; 240; 241; 245; CPC of Ukraine); 2) participation of a specialist in conducting investigative actions (Articles 56, 68; 71; 72; 79; 122; 226; 227; 237; 238; 239; 240; 241; 252; 266; 327; 354; 360; 491 of the Criminal Procedure Code of Ukraine) ; 3) the appointment and conduct of forensic examinations (Articles 69; 70; 79; 101; 102; 122; 242; 243; 244; 245; 327; 332; 486; 509; 518 of the Criminal Procedure Code of Ukraine). That is, the first form — for the subjects of use, and the last two — by type of activity.

A slightly different classification follows V. V. Semenov. It does not lay the basis for the regulation of the law and admits the existence of four forms of the use of special knowledge in the investigation of crimes:

1) forensic examination;

2) participation of a specialist in investigative actions;

3) implementation of audit (control and verification) activities;

4) implementation of expert help and advice[2].

[1] Kravchenko O. A. (2012) *Zastosuvannia spetsialnykh znan pid chas zbyrannia, doslidzhennia ta vykorystannia rechovykh dokaziv: dys. ... kand. yuryd. nauki* [Application of special knowledge during the collection, research and use of material evidence : Candidate of science dissertation]: 12.00.09. Zaporizhia, p. 98 [in Russian].

[2] Semenov V. V. (2006) *Spetsialni znannia pry rozsliduvanni zlochyniv (zmist, orhanizatsiia, vykorstannia): avtoref. dys. ... kand. yuryd. nauk* [Special knowledge when investigating crimes

We believe that special knowledge cannot be unprocessed or not specified by law. In such circumstances, the reasons for the activities of the entities of their use are unclear, and the evidence of the information received in a non-procedural way is questioned, that is, in that case they will be unlawful. Therefore, we consider it expedient, supporting the opinion of V. V. Semenov, to classify the forms of using special knowledge by type of activity.

It should be noted that the forms of applied special knowledge entirely depend on the qualification of the offense and the use of sustainable or modern methods of their implementation adapted to new social conditions. Based on the survey of law enforcement officers and literary sources, we determined that the most appropriate are the following forms of using special knowledge: appointment of forensic examinations; reference and consulting activity; audit and checking records; Involvement of a specialist during investigative (search) actions; questioning the expert; the presence of the investigator during the examination. The most common form is the appointment of forensic examinations, which, in our opinion, should be preferred. Its essence lies in the fact that the bodies of pre-trial investigation and the court establish factual data that cannot be established in another way and which are essential for criminal proceedings. In accordance with Part 1 of Art. 242 of the Criminal Procedure Code of Ukraine provides for expert examination by an expert institution (expert) only on the instructions of an investigating judge or a court granted at the request of the party to criminal proceedings, when special knowledge is required to clarify the circumstances relevant to the criminal proceedings.

By the time it was generally accepted that the organization of forensic examination begins with the decision of the investigator on the necessity of its appointment and consists of the following stages: the investigator decision to take an expert examination, the election of an expert institution (or judicial experts who are not employees of state institutions, or other specialists in the relevant branches of knowledge), the definition of the type of examination and the subject of research, the time of appointment of expertise and objects for examination, including samples and samples, making a decision on the appointment of expertise, referral of the ruling and necessary materials to the expert institution. This opinion is adhered by I. V. Pyrih. The scientist distinguishes the preparatory, working and final stages of the appointment of a forensic examination, and observes that only the process of appointment of an examination can be considered an investigative action, rather than a research[1].

(content, organization, use): Abstract of Candidate of science dissertation]: 12.00.09. Kyiv, p. 175 [in Ukrainian].

[1] Pyrih I. V. (2012) *Ekspertna diialnist orhaniv vnutrishnikh sprav: avtoref. dys. ... dokt. yuryd. nauk* [Expert activity of the law enforcement bodies : extended abstract of ... Doctoral Dissertation]: 12.00.09. Dnipropetrovsk, p. 40.

According to the latest changes proposed by the Law of Ukraine "On Amendments to the Commercial Procedural Code of Ukraine, the Civil Procedural Code of Ukraine, the Code of Administrative Legal Proceedings of Ukraine and other legislative acts", Part 1 of Art. 242 of the CPC of Ukraine provides for expert examination by an expert institution (expert) only on the instructions of an investigating judge or a court granted at the request of the party to the criminal proceedings. Proposed by the legislator changes to the provisions of Art. 242 CPCs of Ukraine, of course, provide some transparency and exclude the conduct of expert examination by the prior agreement of the expert with the parties to the process. At the same time, in our opinion, the procedural independence and independence of the investigator in the decision-making process is leveled out, and doubts about the objectivity of the expert's conclusion can be checked by other evidence, including the appointment of a re-examination. Therefore, spreading this rule to the prosecution side is not appropriate.

There are rare cases in which the investigator himself carries out certain inference on the basis of the available signs that are visible to the naked eye. However, without an expert's assessment, his scientific research on the basis of special knowledge, they cannot be substantiated and have probative force. Undoubtedly, the new knowledge in the expert's conclusion is obtained through the logical processing of the source data (the state of objects, their features in terms of quantitative and qualitative indicators, etc.) and is an indirect knowledge.

Forensic examination is appointed regardless of whether the investigator, prosecutor, judge owns special knowledge, appointing an expert examination, since the actual data obtained through expert examination cannot be reflected in any procedural document, in addition to the expert's opinion.

He highlights the following positive aspects of this aspect: obtaining information on interim results, providing additional information to the expert, which prevents the appointment of additional expert examinations and questioning of the expert in the future[1]. Meanwhile, only 3 % of the polled practitioners indicated that such a form was used. We do not deny the existence of such a form of use of special knowledge, but we consider it appropriate to use it only in exceptional cases.

Criminal procedural legislation provides such a form of using special knowledge as questioning the expert. According to Art. 101 CPC of Ukraine, each party has the right to apply to a court with a petition requesting an expert to interrogate during a trial to clarify or supplement his conclusion. The court also has the right to appoint simultaneous hearings of two experts to find out

[1] Makhov V. N. (2000) *Ispol'zovanie znanij svedushhih lic pri rassledovanii prestuplenij : monografija* [The use of knowledge of knowledgeable persons in the investigation of crimes : monograph]. Moscow : Publishing house: RUDN, p. 203 [in Russian].

the reasons for the discrepancies in the conclusions. That is, it is possible to interrogate the experts involved in the examination as a defense and prosecution side. In addition, the parties to the criminal proceedings have the opportunity to provide information regarding the interrogated expert, enabling the court and the parties to criminal proceedings to objectively evaluate the findings and expertise of experts.

One of the most common forms of using specialized knowledge is the involvement of specialists in conducting investigative actions. As H. I. Hramovych notes correctly, the lack of highly specialized knowledge and skills in the investigator is the basis for this; absence of conditions for independent decision of tasks facing the investigator; the need for ethical, tactical reasons for conducting individual actions by the relevant specialist; a large amount of work that requires special knowledge and skills; the need to use simultaneously several scientific and technical means and methods; the presence of the risk of causing harm to the human body, if specialist knowledge is not used by the relevant specialist (removal of blood samples, detection of a cache by X-rays)[1].

The success of investigative actions in investigating crimes entirely depends on determining their optimal sequence and expediency, timely and proper application of special knowledge. In conducting such investigative actions as an investigator's review of the place of the event, investigator review of documents, appointment of forensic examinations, investigative experiment, presentation of a person for reconnaissance as specialists, inspectors-criminologists, employees of specialized institutions, etc., are involved.

The participation of a specialist is required in conducting both investigative actions and secret investigative actions. In particular, depending on the types of special knowledge required and the situation prevailing during the investigation, specialists from different fields can be involved as specialists: biologists, commodity researchers, auditors, and others. They cannot replace a specialist-criminalist during investigative actions and are involved with him. The aforementioned specialists can only provide advisory and methodological assistance to the investigator[2].

Against the background of changes in legislation, the role of a specialist becomes even more important when conducting a search for a home or other person's possession, in particular, with regard to the mandatory fixation of these acts by means of audio and video recording. The following facts important to the court are recorded: such as: ensuring procedural rights of the

[1] Hramovych H. I. Papers mentioned above, p. 22.

[2] Pyrih I. V. (2006) *Teoriia i praktyka vykorystannia spetsialnykh znan pry rozsliduvanni rozkradan vantazhiv na zaliznychnomu transporti: dys. … kand. yuryd. nauk* [Theory and practice Use of special knowledge in the investigation of cargo stolen by rail : Candidate of science dissertation]: 12.00.09. Kyev, p. 54 [in Russian].

participants; the range of people present and the nature of their actions; ways and sequence of the entrance-exit to the room; location of caches; the moment of detecting, extracting and fixing objects, their status, etc. For such requirements it is expedient to shoot simultaneously with several video cameras, quadcopters or using the latest technologies, such as 3D scanners.

Having analyzed the current legislation and the data of the questionnaires of practical workers, we identified a number of problems that arise during the conduct of investigative (search) actions, and outlined the mechanism for their solution, consisting of: 1) regulatory legal regulation of the activities of the specialist (including verification of detected objects on relevant records); 2) logistics at the proper level; 3) coordination of actions of a specialist with representatives of other services (district, patrol, operative); 4) the expansion of the staff of criminological inspectors in the territorial offices of the police, taking into account the scope and specificity of the existing tasks; 5) observance of normalized working hours, which affects the level of concentration of attention during the gathering of evidence; 6) performance of official tasks corresponding to direct functional duties, etc.

Some scholars have reasonably paid attention to the reference and consultative form of the use of special knowledge, as one of the common procedural forms. For example, an expert's explanation of certain parts of the study will allow the investigator to obtain the necessary information, to clarify certain items or to expand them. As the results of the survey of investigators and experts in the Dnipropetrovsk region showed, 79 % of the consultations were used by them in the following cases: before the appointment of the examination, in the process of its implementation, in the preparation of additional materials, etc.

An important role in criminal proceedings is played by such a non-procedural form of the use of special knowledge, such as checking the records. As you know, the purpose of the investigation of criminal record checks is the identification (identification) of an object, a living person or an unidentified corpse. Today, almost all accounts have an automated form that greatly speeds up the process of obtaining a result. Among the problematic issues in the operation of accounts, one can mention the lack of a single database for all departments, the lack of clear legal regulation for the filling and functioning of databases, late arrivals or verification of objects (for example, checking traces of papillary patterns is only possible after their recognition as suitable for identification, for which reason it is necessary to conduct an examination), etc.

Thus, there is no single approach to the forms of use of special knowledge, but they are much wider than envisaged by law. In such circumstances, in our opinion, it is advisable to classify the forms of application of special knowledge by type of activity and we propose to

allocate the following forms: appointment of forensic examinations; reference and consulting activity; audit and checking records; involvement of a specialist during investigative actions; questioning the expert; the presence of the investigator during the examination. The success of their use entirely depends on determining their timeliness, optimal consistency and feasibility.

ФОРМИ ВИКОРИСТАННЯ СПЕЦІАЛЬНИХ ЗНАНЬ

Г. О. Спіцина*, *Г. С. Бідняк

Досліджено проблемні питання, що стосуються форм використання спеціальних знань при розслідуванні злочинів. Проаналізовано законодавчі акти та думки провідних учених з цього приводу. Зроблено спробу надати пропозиції щодо використання окремих форм.

Ключові слова: спеціальні знання, процесуальні та непроцесуальні, безпосередні та опосередковані, основні та факультативні форми використання спеціальних знань, призначення судових експертиз, участь спеціаліста в слідчих діях, довідково-консультаційна форма, обліки, ревізії.

ФОРМЫ ИСПОЛЬЗОВАНИЯ СПЕЦИАЛЬНЫХ ЗНАНИЙ

А. А. Спицына*, *А. С. Бедняк

Рассмотрены проблемные вопросы, касающиеся форм использования специальных знаний при расследовании преступлений, проанализированы законодательные акты. На основании анализа позиций ученых-криминалистов выделены формы использования специальных знаний, разделяющиеся по различным критериям на процессуальные и непроцессуальные, непосредственные и опосредованные, основные и факультативные и т. д. Обозначены наиболее часто используемые формы, среди которых: назначение судебных экспертиз, привлечение специалиста для проведения следственных действий, консультационно-справочная, ревизии и проверка по учетам, присутствие следователя при проведении экспертизы, допрос эксперта. Проанализированы изменения законодательства, касающиеся проведения экспертизы экспертным учреждением (экспертом) только по постановлению следственного судьи или суда, вынесенным по ходатайству одной из сторон уголовного производства. Отмечены положительные стороны реформы, а также аргументирована точка зрения об утрате процессуальной самостоятельности следователя в принятии решения при таких обстоятельствах, предложено пересмотреть указанные изменения. Учитывая изменения в законодательстве, обозначена роль специалиста во время проведения обыска относительно обязательной фиксации этого действия с помощью аудио- и видеозаписи. Даны предложения по поводу использования нескольких камер, использования квадрокоптеров, 3D сканеров для фиксации важных для доказывания моментов обыска. Очерчены проблемные вопросы, существующие в подразделениях криминалистического обеспечения при проведении следственных действий и предложен механизм их решения. Акцентировано внимание на использовании автоматизированных учетов и перспективы их развития.

Ключевые слова: специальные знания, процессуальные и непроцессуальные, непосредственные и опосредованные, основные и факультативные формы использования специальных знаний, назначение судебных экспертиз, участие специалиста в следственных действиях, справочно-консультационная форма, учеты, ревизии.

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PRINCIPLES OF ORGANIZATION AND FUNCTIONING OF AUTOMATED SYSTEMS IN JUDICOS-EXPERT ACTIVITY

Problems connected with the understanding, classification and implementation of the principles of the organization and functioning of automated systems in forensic expert activity are investigated. Also, the author's definition of legality in forensic expert activity, which is understood as a complex socio-legal phenomenon, the main criterion is the category of lawfulness, consisting of a set of subjective rights, reflected and enshrined in the current legislation, formed as a result of objective social development.

Keywords: *principles of work, information systems, forensic expert research, information provision, expert systems.*

Systemic processing of information remains an important factor in improving the efficiency of forensic expertise. The decisive role in using information is played by ways of its registration, processing, accumulation and transfer, systematic preservation of information and issuance in the right form. One of the main indicators of the information system is its technical equipment, which refers to a set of technical tools designed for the operation of the information system, as well as relevant documentation for these tools and processes.

Based on the essence of our work, we consider the systems that can be used in the activities of forensic institutions. Depending on the purpose of the database of information, the order of searching information systems in expert activities are differentiated into the following types: documentary and factual[1].

Documentation information systems contain an array of data consisting of documents that are not subject to formalization, that is done in an appropriate way. Such documents may include legislative acts, conclusions of expert studies, analytical certificates and other documents. Consequently, documentary information systems are those that search for documents in connection with the request, with the subsequent issue to the user of these

[1] Zakharova I. V. Filipova L. Ya. (2013) *Osnovy informatsiino-analitychnoi diialnosti: navch. posib. dlia stud. vyshch. navch. zakl*. [Fundamentals of information and analytical activity: Tutorial for Higher Schools]. Kyiv : Center sci.lit., p. 33 [in Ukrainian].

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documents (their copies) or their registration numbers. Preparation for obtaining information in the system and its further processing is carried out directly by the user.

Factual information systems contain an array of data (facts, attributes) filed in a formalized form. For such systems special classifiers are created, which translate the corresponding language of documents into artificial (formalized). In fractographic information systems, the user receives information directly on the request. Therefore, in such systems, the search is not a specific document, but the information contained in the primary documents on the user's request. Consequently, the difference between factual information systems from documentaries is that factual systems do not issue in advance the whole of the document entered, and the processed partial information from a particular document[1].

Institutions of forensic examinations in their activities use mainly factual information systems. Under the factual information should be understood not only the actual information, but also the theoretical, evaluative nature, that is, it should include facts, concepts, all that can be the object of extracting from the text, description in a certain information language, stored in that or another information system, 3 for example,[2] dactyloscopic accounting systems. In these systems, a person is described by a set of signs of a personal character (on a dactylocard, besides the fingerprints of ten fingers, the surname, name, patronymic, year and month of birth of a person, grounds for fingerprinting, etc.), as well as fingerprints of the hands are derived the main and additional formulas, representing a number of digits of the numerator and denominator (a unique code of the person). For such a code, in particular for the additional formula, one can determine the type and type of the papillary pattern of any fingerprint of a particular person's hand. Direct access to information stored in factual systems helps to effectively conduct research of objects (material evidence) for card files and track records. Factual information systems, as well as documentaries, are now automated on the basis of different brands and types of computers[3].

Each information system can be built according to certain principles, depending on the purpose of the creation.

The most important principle of the activities of any organization or system is the principle of legality. Lawfulness (Article 8, Clause 1, Article 3, Article 129 of the Constitution) is a basic principle that is universal and is manifested in all the rules of procedural law, characterizing all aspects of legal

[1] Piliukov V. O. (2009) *Vykorystannia informatsiinykh system v ekspertnykh pidrozdilakh MVS Ukrainy: dys. ... kand. yuryd. nauk* [Use of information systems in the expert divisions of the Ministry of Internal Affairs of Ukraine : Candidate of science dissertation]: spec. 12.00.09. Kyev, p. 44 [in Ukrainian].

[2] Zakharova I. V. Filipova L. Ya. Papers mentioned above, p. 34.

[3] Piliukov V. O. Papers mentioned above, p. 45.

proceedings. In the rule of law, which declared itself Ukraine, the rule of law is in force. The Constitution of Ukraine has the highest legal force. Laws, regulations are adopted on its basis and correspond to it. The norms of the Constitution of Ukraine are rules of direct action. The principle of legality consists in a unified procedure of proceedings in the relevant jurisdiction, the implementation of the procedural form and the prescribed procedure for the application of the law[1].

Lawfulness, according to V. D. Tkachenko, can be considered in the aspect of the necessity (requirements, duty) to comply with the rules of law. This testifies to its organic, inextricable connection with the law as a system of norms and principles. Society, as well as a state that recognizes and protects legal norms, requires strict and strict observance and enforcement by all subjects of social relations. Such requirements of the law of law (law) were formed a millennium ago, and only today received in the legal science the title of legality as a manifestation of universal binding law. However, the requirements of law enforcement to characterize legality is not enough. It is necessary to ensure the real impact of the right to human behavior. In this aspect, legality is the observance and enforcement of the rules of law (laws) by state bodies, officials, citizens and their social organizations, that is, the commission of their lawful actions. In the event that the rule of law (law) assigns members of public relations certain actions, the legality will be manifested in the exact execution of the rules of law (laws); if the rule of law (law) prohibits certain actions, lawfulness will mean refraining from doing such actions; if the law (the norm of law) gives the subjects of public relations the right to exercise certain actions at their discretion, legitimacy will dictate the impossibility of going beyond its limits. Lawfulness always means conformity of behavior (activity) of subjects of social relations with the norm of law (law)[2].

O. F. Skokun interprets the term “legitimacy”, as an integrated concept that covers all aspects of the existence of law — from its role in the creation of a law to the implementation of its norms in legal practice. Lawfulness reflects the legal nature of the organization of socio-political life, the organic relationship of law and power, law and state, law and society. The requirements of lawfulness apply equally to the supreme bodies of state power, other state bodies, which take sub-legislative acts (sphere of law-making), direct executors of the laws — officials, as well as public organizations, commercial corporations, citizens (sphere of right-realization) in the framework of their competence. Lawfulness is characterized by the

[1] Chernyshova N. V. (2011) *Sudova vlada v Ukraini: navch. posib*. [Judiciary in Ukraine: Tutorial]. Kyiv : Center sci.lit., p. 8 [in Ukrainian].

[2] *Zahalna teoriia derzhavy i prava / za red. M. V. Ivina, V. D. Tkachenka, O. V. Petryshyna* (2002) [General theory of state and law / ed. by M. V. Ivin, V. D. Tkachenko, O. V. Petryshyn]. Kharkiv : Pravo, p. 385 [in Ukrainian].

unity of two features: external (formal) — the duty to comply with the laws and regulations by state authorities, officials, citizens and other associations; internal (substantive) — the presence of scientifically substantiated and responding to the law of laws, the quality of laws[1].

Studying the essence of the above principle, O. M. Bandurka emphasized that the principle of legality is that officials are obliged to comply with the requirements of legislation in strict accordance with their content. Being a principle and method of social relations, a regime of social life, legality is an integral part of the mechanism of regulation of social relations, is a prerequisite for law and order, state and public discipline, an important element of democracy and culture[2].

Ensuring the principle of legality in the implementation of forensic activities is possible in the implementation of many requirements. The most significant ones include: 1) strict adherence to the requirements of the Constitution of Ukraine, laws and by-laws of the normative-legal acts; 2) high level of general and professional legal awareness of employees of forensic expert institutions; 3) continuous improvement of the legal and moral and ethical foundations of the staff by a forensic expert institution; 4) securing the confidentiality of information that became known to the court expert during the study of the relevant materials; 5) strengthening the prestige of the profession, etc.

Consequently, *the legality of forensic expert activity is a complex social and legal phenomenon, the main criterion of which is the category of legality, consisting of a set of subjective rights, reflected and enshrined in the current legislation, which arose as a result of objective social development.*

The principles for the selection of information must be implemented in order for the selected data to be necessary and at the same time not excessive and thus do not create difficulties in the use of information. That is, the information must be reliable, relevant and complete. Information should come from reliable sources, processed using reliable methods and not distorted during its transmission. The information included in the information system should be relevant, that is, reflect the current state of science and technology in the field of forensic expertise. The completeness of information is ensured by the coverage of all the data that is needed. It is inadmissible to selectively select data, which may lead to erroneous conclusions[3].

Information provision of expert activity necessarily includes the principle of using hardware and software modules. Under the hardware

[1] Skakun O. F. (2000) *Teorija gosudarstva i prava : uchebnik* [State and Law Theory : manual]. Kharkov : Consum, p. 483 [in Russian].

[2] Bandurka O. M. (2002) *Operatyvno-rozshukova diialnist : pidruchnyk* [Operational-search activity textbook]. Kharkiv : KhNUIA, p. 88.

[3] *Avtomatizacija sudebnoj jekspertizy, ee programmnoe obespechenie. Sudebnyj jekspert — psiholog* [Automation of forensic examination, its software. Forensic scientist expert is a psychologist]. URL: http://www.sud-expert.net/index/0–36 [in Ukrainian].

module refers to a unified functional node, executed as an independent product. The software module can be considered a unified program element, which performs a certain function in the general software. Compliance with the principle of using software and hardware modules will allow: to ensure the compatibility of computer technology and software at various levels of forensic expert work; to increase the efficiency of the functioning of information systems; accelerate the construction of unified information models.

Information system is always based on the principle of the possibility of its phased creation. This means that when designing the system, it is necessary to provide for the possibility of a constant increase in the number of automation objects, expansion of the users of the system, the continuous increase in the number of tasks to be solved, and so on.

The system of information provision for forensic expert activity should be carried out on the principle of simplicity and flexibility in terms of specific requirements of a specific application. Today, the convoy-expert practice requires the full use of modern advances in science and technology. Therefore, the information system must be adapted to this and have certain, predetermined reserves. The system should not cause physical and psychological stresses on its user. The system of information support should be based on the principle of flexibility, that is, it is easy to adapt to the growing and changing needs, to expand information capabilities, to include new data in.

One of the most important is the principle of system acceptance for the user-person-to-person dialogue. When a person works with a computer, psychological barriers arise. The practice of building automated systems in general requires the use of psychological knowledge. Until recently, the center of attention of psychologists who are guided by this problem, was the operator. Nowadays the researches of computer users (experts of criminologists, scientific and management employees, etc.) are becoming more and more important[1].

The principle of distribution of information provision is due to the need to solve a variety of expert tasks, therefore information support expert activity is through the creation of relatively autonomous subsystems, determined by the type of problem solved. Such subsystems should enable experts to easily navigate in their structure and information arrays.

The methodological principles of the formation of automated information systems must meet two main requirements: a) to reflect reality in a comprehensive way; b) optimally transform the reality in the interests of the expert on the basis of the formation of a holistic knowledge system about the

[1] Vertuzaiev M. S. Kovalenko M. M. Cherevyk V. M. (1997) *Ekspertni systemy v diialnosti orhaniv vnutrishnikh sprav : metod. rozrobka* [Expert activity of the law enforcement bodies : Methodical formulation]. Kyiv : National Academy of Internal Affairs, p. 17–21 [in Ukrainian].

entire set of research methods, properties of objects, trends in their optimal expression, taking into account specific conditions.

Of great importance is the principle of novelty of tasks. The essence of the principle is to change the traditionally formed methods and techniques of information provision in accordance with the new features that give the computer. This means that when analyzing the work of the information system, there are losses in its organization (inappropriate loading of equipment, simple, etc.). According to the results of the analysis, a list of tasks is developed, which are not fully solved on obsolete computers, but which can be solved with the help of modern electronic computers.

The principle of structural organization of information provision is aimed at the distribution of information, taking into account its classification by classes, species, subspecies, etc. An optimally functioning system should be constructed in such a way that it helps to correctly construct the request by refining it and specifying it. This function can be performed by an information system built on a dialogue basis. Information systems should be designed in such a way that they are easily integrated into a single system. Externally heterogeneous systems of information support are built as a single system, united, for example, the only object. Thus, a single system of dyes of all kinds can be created, which can be equally used in the study of materials, substances, products, and in the technical study of documents[1].

The modern information system should take into account the principle of a systematic approach. System approach — is direction of the methodology of special-scientific knowledge and social practice, which is based on the study of objects as systems. The system approach contributes to the adequate formulation of problems in specific sciences and the development of an effective strategy for their study. Methodology, the specificity of the system approach is determined by the fact that it orientates the study to reveal the integrity of the object and the mechanisms that provide it, to identify the diverse types of connections of the complex object and bring them into a single theoretical picture. It is necessary to create an information system on the basis of system analysis of the object and object management system. In particular, it is necessary to set the purpose, as well as the criteria for the functioning of the object of management, to organize their structuring, which opens the whole complex of problems of information adequacy, which needs to be solved, so that the created system is best suited to the stated goals and established criteria. This complex combines technical, economic and organizational needs. Application of the principle of a systematic approach is important, as it allows the use of mathematical apparatus and computer technology in the creation of an information system in forensic expertise.

[1] Automation of forensic examination, its software.

The principle of combining the preparation of primary and machine documents significantly reduces the possibility of subjective errors. This can be achieved in the following ways: combining the original and the machine document into a single document; use of devices that simultaneously prepare the original document and its machine copy (flexor); direct connection to computers of devices on which the primary documents are prepared (printers). In addition to reducing the possibility of errors, compliance with this principle eliminates the need for additional work on the transfer of primary documents on carriers.

The principle of consistency of bandwidths of individual parts of the system involves the coherence of the bandwidth of individual devices (the nominal speed of their operation) and their reliability. There is no need to increase the speed of computer operations, if the bottleneck in the system is the speed of input or exchange of information between the external memory and the computers in solving specific problems.

The principle of protection of data banks is particularly relevant in the conduct of forensic examinations, as experts engage in specific activities, and such activities must be protected from unauthorized actions by unauthorized persons. The essence of this principle is as follows: information systems created contain information access to which is allowed to a certain circle of persons; therefore, the information system should have a special device of protection against interference with the system of third parties. For this reason, the user has his own "key" (code, cipher), through which he accesses his information array.

Means of information protection should also take into account the situations of accidental destruction, unauthorized replication, to exclude the work of the system of an incompetent user, who tries to make corrections or additions to her own discretion. Efficient systems have large amounts of information, which makes it necessary to automate them[1].

The principle of using the professional language allows the expert (user) communication with the information system in the professional language, reproducing the input and output information in a form that is user-friendly, to make adjustments to the problem-solving process without violating the research methods using a single terminology[2].

The stated principles of the organization and functioning of automated systems can and should be used in the creation of information systems forensic expertise.

[1] Automation of forensic examination, its software.
[2] Papers mentioned above, p. 58–59.

ПРИНЦИПИ ОРГАНІЗАЦІЇ ТА ФУНКЦІОНУВАННЯ АВТОМАТИЗОВАНИХ СИСТЕМ У СУДОВО-ЕКСПЕРТНІЙ ДІЯЛЬНОСТІ

Є. М. Попович

Досліджено проблеми, пов'язані із розумінням, класифікацією та реалізацією принципів організації й функціонування автоматизованих систем у судово-експертній діяльності. Також наведено авторське визначення законності в судово-експертній діяльності, під якою розуміється складне соціально-правове явище, основним критерієм якого є категорія правомірності, що складається з сукупності суб'єктивних прав, відображених і закріплених у чинному законодавстві, які склалися в результаті об'єктивного суспільного розвитку.

Ключові слова: принципи роботи, інформаційні системи, судово-експертні дослідження, інформаційне забезпечення, експертні системи.

ПРИНЦИПЫ ОРГАНИЗАЦИИ И ФУНКЦИОНИРОВАНИЯ АВТОМАТИЗИРОВАННЫХ СИСТЕМ В СУДЕБНО-ЭКСПЕРТНОЙ ДЕЯТЕЛЬНОСТИ

Е. Н. Попович

Исследованы проблемы, связанные с пониманием, классификацией и реализацией принципов организации и функционирования автоматизированных систем в судебно-экспертной деятельности. За основу классификации приняты системы, которые могут использоваться в деятельности судебно-экспертных учреждений. В зависимости от назначения информационные системы дифференцируются на следующие виды: документальные и фактографические. Учреждения судебных экспертиз в своей деятельности используют, в основном, фактографические информационные системы. Каждая информационная система, в зависимости от цели создания, может быть построена по определенным принципам. Нами приведен детальный анализ таких первооснов деятельности автоматизированной системы, а именно: принцип законности; принцип отбора информации; принцип использования аппаратных и программных модулей; принцип возможности поэтапного создания информационной системы; принцип простоты и гибкости с точки зрения специфических требований конкретного применения информационной системы; принцип приемлемости системы для пользователя диалога «человек — машина»; принцип распределения информационного обеспечения; принцип новизны задач; принцип структурной организации; принцип системного подхода; принцип сочетания подготовки первичных и машинных документов; принцип согласованности пропускных возможностей отдельных частей системы; принцип защищенности банков данных; принцип использования профессионального языка и т. п. Дано авторское определение законности в судебно-экспертной деятельности, под которой понимается сложное социально-правовое явление, основным критерием которого является категория правомерности, состоящая из совокупности субъективных прав, отраженных и закрепленных в действующем законодательстве, которые сложились в результате объективного общественного развития.

Ключевые слова: принципы работы, информационные системы, судебно-экспертные исследования, информационное обеспечение, экспертные системы.

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TOPICALITY OF FORENSIC MOLECULAR GENETIC EXAMINATION AND ISSUES REGARDING ITS PERFORMING

Features and modern possibilities of using molecular genetic research methods of investigation while criminal proceedings are considered. The problems of forensic molecular genetic expertise are analyzed and the ways of their solution are determined, as well as prospects for using DNA analysis in Ukraine.

Keywords: DNA analysis, molecular genetic examination, identification, DNA profiling, criminal proceedings.

Problem definition. Significant popularity among the achievements of science in the late XX and early XXI century in the world of forensic medicine has acquired the method of DNA profiling in a biological examination, or DNA analysis, through which modern means of identifying a person have been created. This is the most effective method of researching traces of biological origin used in forensic institutions of Ukraine while performing forensic examinations in criminal proceedings.

Analysis of recent research and publications. The general problems of the use of special knowledge and, in particular, DNA analysis during the investigation of crimes, are devoted to the works of A. I. Winberg, V. G. Goncharenko, G. I. Hramovich, Yu. M. Groshevoy, A. Ya. Dubinsky, V. S. Zelenetsky, A. V. Ishchenko, N. I. Klimenko, I. M. Kozachenko, V. O. Konovalova, A. N. Kolesnichenko, G. V. Kryvdi, M. V. Kostytsky, E. D. Lukianchikova, O. V. Matarikina, G. V. Mudreckaya, S. V. Petrychuk, I. Ya. Friedman and others. Important provisions for the study of the established problem are considered in these scientific researches.

The **purpose of the paper** is to study issues related to the use of DNA analysis, to specify its place and role in the system of means and methods of crime investigations, to develop proposals for further improvement of the regulatory framework in this field.

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Main content presentation. Modern requirements put ample opportunities before subjects performing criminal proceedings regarding the introduction into evidence system forensic examinations. Role of material evidence, experts' conclusions, as the most important objective sources for creating a reliable evidence base while crime investigation is growing significantly. Currently, it is about identifying individuals while investigation of serious crimes, including murders, on-demand, serious bodily harm, and crimes related to kidnapping.

Today, one of the most effective methods of research on traces of biological origin used in forensic institutions is the DNA analysis method that allows to identify a person with almost absolute precision while comparing DNA data. Object of molecular genetic research can be nuclear DNA, derived from blood, secretions (sperm, saliva, buccal and other epithelium, etc.), hair (upon the availability of hair follicles in) as well as parts of organs and tissues of the human body[1].

For the first time, the possibility of studying such material was reported by British scientists in 1985. For the first time, the possibility of studying such material was reported by British scientists in 1985. Since then, this trend in forensic medicine has started to develop rapidly and has been called DNA profiling, DNA analysis, molecular genetic examination, forensic DNA analysis etc. DNA typing firmly entered into the expert activity of forensic services of a considerable number of developed countries of the world: Great Britain, France, Germany, Austria, Italy, Spain, the USA, Switzerland, Japan, etc. In Ukraine, this method of identifying a person by Expert Service of the Ministry of Internal Affairs start to work from the 90s of the twentieth century in Scientific Research Forensic Center of the Ministry of Internal Affairs of Ukraine[2].

Molecular genetic identification is a new scientific knowledge that makes possible opportunities for solving identification tasks during criminal process and development of evidence base having a number of advantages over the traditional serological methods of studying human biological traces, namely:

[1] Petrychuk S. V. (2015) *Osoblyvosti pryznachennia ta provedennia molekuliarno-henetychnykh ekspertyz. Suchasni kryminalistychni eksper-tyzy v rozsliduvanni zlochyniv: materialy «kruhloho stolu» (Kyiv, 25 liutoho 2015 r.)* [Specifics of assignment and performing of molecular genetic examinations. Modern Forensic Science in Crime Investigation: Round Table Content (Kyiv, February 25, 2015)]. Kyiv : National Academy of Internal Affairs, p. 46 [in Ukrainian].

[2] Matarykina O. V. (2017) *Aktualnist molekuliarno-henetychnoi ekspertyzy na etapi suchasnoho rozvytku kryminalistyky. Suchasni tendentsii rozvytku kryminalistyky ta kryminalnoho protsesu: tezy dop. mizhnar. nauk.-prakt. konf. do 100-richchia vid dnia narodzhennia prof. M. V. Saltevskoho, Kharkiv, 8 lystop. 2017 r.* [Topicality of forensic molecular genetic examination at the modern stage of criminalistics development. Modern trends in development of criminalistics and criminal procedure: Theses of International Academic Conference dedicated to the 100th anniversary of the birth of prof. M. V. Saltevskyi Kharkiv, 8, November. 2017, Kharkiv, p. 126. URL: https://www.naiau.kiev.ua/files/naukova-diyalnist/naukovizaxodi/zbirnuki/2015/zb-krum-ekspert.pdf [in Ukrainian].

1. Structure of the DNA molecule is more resistant to physical and chemical factors of the environment than the proteins and other compounds.

2. Availability of complete information in the DNA about the human genotype in each body cell containing a nucleus.

3. Research methods of such micro traces (cells in saliva, sperm, hair follicles with a vaginal membrane, etc.) allow person identification with an accuracy of 99.9 %.

4. Differentiation possibility of mixed traces and the fact of mixing biological material of several persons.

Analyzing these provisions, we can tell about high degree of probability of experts' conclusions regarding the affiliation of traces to a particular person.

Modern progress in forensic molecular genetic examination allow to obtain information about a particular person using traces variety of biological origin especially while committing grave crimes against human life and health, that are usually found at the scene and belong to a human being. A significant advantage of this method crime investigation is precisely the safe exclusion of suspected persons not involved in the commission of a crime in identifying those who committed a crime with a high probability level.

Use of molecular genetic identification of a person by biological trace allows to solve several problems.

First, determine affiliation of biological traces (blood, sperm, saliva, hair) discovered at the crime scene with a suspected person.

Secondly, determine that biological traces, extracted from scenes of undiscovered crimes belong to one person. This allows to provide a version about a series of crimes commission by one person, combine available information about committed crimes and to approach in a different angle to evaluation and to draw up a psychological profile of an offender[1].

Thirdly, make a comparison of biological traces removed from a crime scene, with DNA databases information formed by law enforcement agencies.

Fourthly, differentiation of DNA in mixed traces of biological origin makes possible determining the number of persons whom a biological substance belongs to.

Fifthly, determinate whether there is a family relationship between persons in cases of infanticide, theft or children substitution, etc.

Consequently, biomaterial research for the purpose of identifying a person is performed in the following cases:

[1] Lukianchykov Ye. D. (2015) *Vykorystannia DNK-analizu u kryminalnomu provadzhenni. Suchasni kryminalistychni ekspertyzy v rozsliduvanni zlochyniv: materialy kruhl. stolu: (m. Kyiv, 25 liutoho 2015 r.)* [DNA analysis use in criminal proceedings. Modern Forensic Science in Crime Investigation: Round Table content: (Kyiv, Kyiv, 25 February 2015.)]. Kyiv : National Academy of Internal Affairs, p. 40. URL: https://www.naiau.kiev.ua/files/naukova-diyalnist/naukovi zaxodi/zbirnuki/2015/zb-krum-ekspert.pdf. [in Ukrainian].

1) determining affiliation of a biomaterial to a particular person or excluding such affiliation;

2) determining sexual affiliation of biological traces and objects;

3) pregnancy case after rape to determine that the pregnancy has come from the suspect and that he is the child's genetic father this fact exclusion;

4) infanticide (including newborns), kidnapping children, replacing them in maternity hospital to determine whether persons corresponding to the case are the parents of the child;

5) determining whether there are remnants or parts of the corpse with remains of one person and whose own research of samples of close relatives;

6) connection detection between different crimes — traces determination of biomaterials that are detected on the scene of different crimes left by the same person;

7) comparison of a biological object genetic profile with genetic data stored in a computer database according to coincidence to orient investigation for a search of a certain person, etc[1].

Despite rapid development of DNA analysis and its relevance in modern forensic medicine, there is a question about its weaknesses, performing problems and ways of their solution.

First, there is no clear legislative regulation. According to the law, DNA analysis is just one of the types of evidence, and according to Part 2 of Art. 94 of the Criminal Procedure Code of Ukraine, no evidence has a predetermined force. Therefore, judges do not regard the results of judicial molecular genetic expertise as the truth of the last instance: they can take this into account when making a judgment, but may also reject it.

In many developed western countries (United States, France, Germany and others) legislative framework is adopted. This framework does not allow proceedings in criminal and civil cases involving identity person without performing out molecular genetic analysis. For example, according to American scientific legal literature, over last few years, thanks to DNA analysis has been obtained evidence that gave grounds for release of 72 prisoners; 8 people escaped death sentence; and from 18,000 detainees on suspicion of rape or murder with rape — 27 people were released due to differences between their genetic code and the code of the real offender[2].

[1] Mudretska H. V. Tsykova O. V. (2014) *Problemy vykorystannia danykh DNK analizu pid chas rozsliduvannia zlochyniv. Naukovyi visnyk Uzhhorodskoho nats. un-tu. Ser.: Pravo.* [Issues of DNA data analysis use while crime investigations. Scientific Bulletin of the Uzhgorod national University Ser: Pravo]. Issue 26. P. 248. URL: http://nbuv.gov.ua/UJRN/nvuzhpr_2014_26_65 [in Ukrainian].

[2] Kryvda H. F. Lavreniuk V. I. (2003) *Otsinka sudom sudovo-medychnykh molekuliarno-henetychnykh ekspertyz ta neobkhidnist yikh zakonodavchoi rehlamentatsii. Pravova derzhava* [Evaluation by the Court forensic molecular-genetic examinations and need for their legislative regulation. Pravova derzhava]. № 6, p. 194 [in Ukrainian].

Adoption of amendments and additions to the Criminal Procedure Code of Ukraine allowed to develop all necessary provisions for the successful use of DNA analysis in crime fighting at the departmental level.

Secondly, results interpreting problem of a molecular genetic research is associated with insufficient data. Thus, a forensic scientist is obliged to include in the research a greater number of examples in order to increase the probability of evidence and to exclude the random coincidence of genotypes[1].

To solve this problem, it would be effective to make a decision regarding creation of a National database of human genetic characteristics. So far, creation of this base is restrained by the lack of a clear legislative regulation of this issue and the lack of quantity and capacity of existing DNA laboratories.

In developed countries, effectiveness of using such databases for search and investigative purposes is confirmed by experience of their use. For example, in England there are hundreds of thousands of genetic profiles that are actively used while crime investigations. For comparison, only a few hundred genotypes of DNA were collected in the Department of Forensic Medicine of Odessa.

One of the most important aspects is the possibility of using criminalistic records of human genetic characteristics with information retrieval automated systems[2]. Such automated records store and accumulate data obtained while research with the aim of further verification by comparison with data already included in the database. DNA database use makes possible to relate several crimes committed by one person. If there is a database of objects genetic characteristics obtained from scenes of undiscovered crime; it is possible to compare search information about number of serial crimes and relate them.

Thirdly, there are typical weaknesses while biological traces obtaining and forensic examination assignment. While removing biological traces, these include: improper packaging of wet objects; use as packages of polyethylene bags, bags, etc .; contamination of objects containing biological traces, etc., and when appointments of expertise: a long period of time between the removal of materials and the examination; referral for examination of shotguns (the temperature at the time of the shot reaches 600°C and destroys the biological traces), washed away brown matter from the body, and so on.

It should be noted that availability of positive traces identification results of biological origin depends on successful practical actions of law enforcement officers and experts of forensic medicine laboratories. Therefore, it is necessary at the legislative level to develop and consolidate certain standards that will contain provisions on rules for biological traces seizure and the procedure for performing a molecular genetic examination. In

[1] Kryvda H. F. Lavreniuk V. I. Papers mentioned above, p. 195.
[2] Matarykina O. V Papers mentioned above, p. 127.

particular, all participants of inspection (search) should be forbidden to touch items containing traces of biological origin, except experts. In addition, it is necessary assign an examination for 1-3 days after objects seizure.

Fourthly, molecular genetic examinations deadline significantly exceeds terms of pretrial investigation, postponed for a long period of time according to the order of their execution and due to considerable workload of forensic scientists which impedes criminal proceedings rapid performance, a complete and unbiased investigation of its circumstances, to ensure the adoption of reasonable decisions within a reasonable time.

In our opinion, the main problem is insufficient number of DNA laboratories in departments of the Ministry of Internal Affairs, the Ministry of Healthcare and their entire absence in other law enforcement agencies. Capabilities of existing laboratories do not meet the needs of pretrial investigation agencies in disclosing and investigating serious and resonant crimes. Therefore, this problem should be solved by expanding the network of laboratories that will perform a molecular genetic examination.

Fifthly, there are important questions connected with genetic data registration. Possibility to store and the use genetic information is considered in the context of rights protection of a person. In this regard, large-scale DNA profiling is not performed today.

Conclusions. Summing up, we arrive at the following conclusions:

— at the present stage of forensic molecular genetic examination development there are significant gaps in legislation that are solved by adopting relevant normative and legal acts and improving existing ones;

— an effective method for development of DNA analysis is appropriate bases creation of genetic personal characteristics. However, the legislative consolidation of this process should take place in the context of respecting and protecting of personal rights;

— currently, terms of molecular genetic examinations performing significantly exceed terms of pretrial investigation. This problem can be solved by expanding a network of laboratories that will perform such examination.

Despite problems, it is possible to affirm that DNA analysis is the most effective and reliable of all known methods of person identification at the present stage. At present, forensic molecular genetic analysis develops not only as a section of molecular genetic research but also as a complete element of criminalistic knowledge, that is aimed at investigating and disclosing crimes. Therefore, implementation of molecular genetic research methods into the practice of law enforcement agencies in Ukraine will significantly increase the effectiveness of investigation of many serious crimes against person.

АКТУАЛЬНІСТЬ СУДОВОЇ МОЛЕКУЛЯРНО-ГЕНЕТИЧНОЇ ЕКСПЕРТИЗИ ТА ПРОБЛЕМНІ ПИТАННЯ ЩОДО ЇЇ ПРОВЕДЕННЯ

В. В. Топчій

Розглянуто особливості та сучасні можливості використання молекулярно-генетичних методів дослідження під час кримінального провадження. Проаналізовано проблеми проведення судової молекулярно-генетичної експертизи та визначено шляхи їх вирішення, а також перспективи використання ДНК-аналізу в Україні.

Ключові слова: ДНК-аналіз, молекулярно-генетична експертиза, ідентифікація, генотипоскопія, кримінальне провадження.

АКТУАЛЬНОСТЬ СУДЕБНОЙ МОЛЕКУЛЯРНО-ГЕНЕТИЧЕСКОЙ ЭКСПЕРТИЗЫ И ПРОБЛЕМНЫЕ ВОПРОСЫ, КАСАЮЩИЕСЯ ЕЕ ПРОВЕДЕНИЯ

В. В. Топчий

Современные достижения судебно-медицинской молекулярно-генетической экспертизы позволяют получать информацию о конкретном лице с помощью разнообразнейших следов биологического происхождения, особенно во время совершения тяжких преступлений против жизни и здоровье человека, которые по обыкновению оказываются на месте события и принадлежат организму человека. Значительное преимущество этого метода при расследовании уголовных преступлений состоит именно в надежном исключении из круга подозреваемых лиц, не причастных к совершению преступления, в идентификации лиц, которые совершили преступление с высокой степенью вероятности. На современном этапе развития судебной молекулярно-генетической экспертизы имеются существенные пробелы в законодательстве, которые решаются путем принятия соответствующих нормативно-правовых актов и усовершенствования действующих. Эффективным методом для развития ДНК-анализа является создания соответствующих баз генетических признаков человека. Однако, законодательное закрепление этого процесса должно происходить в контексте уважения и охраны прав личности. Сейчас сроки выполнения молекулярно-генетических экспертиз значительно превышают сроки досудебного расследования. Эта проблема может быть решена путем расширения сети лабораторий, которые будут проводить такую экспертизу. Вопреки наличию небольшого количества проблем, можно утверждать, что ДНК-анализ является наиболее эффективным и надежным изо всех известных в мире методов идентификации личности на современном этапе. Сейчас экспертный молекулярно-генетический анализ развивается не только как раздел молекулярно-генетических исследований, но и как полноценный элемент криминалистического знания, которое направлено на расследование и раскрытие преступлений. Поэтому внедрение молекулярно-генетических методов исследования в практику работы правоохранительных органов в Украине значительно повысит эффективность расследования многих тяжких преступлений против личности.

Ключевые слова: ДНК-анализ, молекулярно-генетическая экспертиза, идентификация, генотипоскопия, уголовное производство.

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ROLE OF FORENSIC SCIENCE IN THE SYSTEM OF THE CYBER-THREAT COUNTERACTIING IN THE FIELD OF INFORMATION SECURITY OF UKRAINE

Analysis of scientific opinions on the content of counteraction to cyber threats in the field of information security of Ukraine was made, the place and functions of forensic expertise in this activity were determined. The content of expert prevention has been clarified and functions-tasks solved during the detection of crimes of interference in the work of information and telecommunication systems have been clarified. Recommendations on the directions of research implementation for the formation of the theoretical basis for the use of forensic examinations in counteracting cyber threats are given.

Keywords: cyber threats, information security, malicious software, crime prevention, computer-technical expertise, unauthorized interference with the work of information and telecommunication systems.

XXI century was marked by the rapid development of nanotechnology and the Internet, which became the basis for the formation of a modern information society. As a result, new types of criminal activity have emerged, forming a number of threats to national security, especially in the information sphere. This requires the introduction of the latest methods for detecting and documenting crimes, building an appropriate system for combating crime with the definition of all its elements.

The basis of any crime prevention system is to identify the legal and organizational preconditions of threats with the comparison of functions-tasks that are being solved at each stage of crime counteraction.

The study of the works of scientists of the 90s of the last centuries showed that at the stage of formation of an independent Ukrainian state, scientific research on fundamental-applied problems of forensic examination and its place in counteracting criminal activity was intensified. Problems of expert prevention were engaged I. A. Aliiev, D. P. Hurina, Yu. S. Sushko[1]

[1] Alyev Y. A. (1990) *Problemy sudebno-jekspertnoj profilaktiki: dis. ... dokt. jurid. nauk.* [Problems of Forensic Expert Prevention : Candidate of science dissertation]. Kyiv; Hurina D. P.

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and others They introduced conceptual approaches to preventive activities during the implementation of forensic examinations of various types.

In scientific articles of the beginning of the XXI century. Problems of counteracting crime using forensic examination were considered in the context of prevention of crimes during the implementation of specific court examinations. Analysis of works of that time allows us to determine that the content of expert prevention is the establishment on the basis of special knowledge of facts containing information about the circumstances of the events that contributed to the commission of a crime (the offense) and the transformation of these data through voluntary acts of lawful persons with the ultimate aim of eliminating these circumstances in present and future or bring them to a minimum[1]. A similar view is shared by a number of scholars. They believe that forensic expertise belongs to activities in which the causes and conditions for the commission of specific crimes are established. Taking into account the prevailing opinions among scientists and practitioners regarding the content of the struggle and counteraction to crime, it can be stated that forensic expertise fulfills general and special tasks, and not only prevention of crimes. Thus, expert preventive activity is a component of counteraction to crimes, which consists in the use of special knowledge aimed at improving the theoretical and legal, organizational and tactical foundations of conducting search and detective investigations (detective actions) and other measures aimed at identifying and eliminating the circumstances of the commission. criminal and other offenses.

The overwhelming majority of scientific researches for obtaining the degree of a doctor and a candidate of legal sciences in the specialty "forensic examination", after the adoption of the *Criminal Procedure Code* of 2012 were aimed at creating a system of expert support in general in the criminal process and during the pre-trial investigation of criminal proceedings. Thus, in the opinion of I. V. Pyrih to the conceptual foundations of forensic expert analysis includes expert prevention[2]. O. R. Rossinsky distinguishes between

(2009) *Ekspertna profilaktyka: stanovlennia ta perspektyvy rozvytku: avtoref. dys. ... kand. yuryd. nauk: 12.00.09 «Kryminalnyi protses ta kryminalistyka; sudova ekspertyza»* [Expert prevention formation and prospects of development : extended abstract of Candidate of science dissertation: 12.00.09 Criminal Procedure and Criminology; forensic examination; operational search activity]. Kyiv, p. 16; SushkoYu. S. (1994) *Aktualni problemy profilaktychnoi diialnosti pry provedenni sudovo-ekonomichnykh ekspertyz: avtoref. ... kand. yuryd. nauk* [Actual problems of preventive activity during conducting of forensic economic examinations : extended abstract of Candidate of Science Dissertation]: 12.00.09 Criminal Procedure and Criminology; forensic examination; operational search activity. Kyev, p. 25 [in Ukrainian].

[1] Bordiuhov L. H. *Profilaktychna funktsiia sudovoi ekolohichnoi ekspertyzy* [Preventive function of judicial ecological expertise]. URL: http://nauka.kushnir.mk.ua/?p=43758/ (Date accessed: 25.07.2018) [in Ukrainian].

[2] Pyrih I. V. (2015) *Teoretychni osnovy ekspertnoho zabezpechennia dosudovoho rozsliduvannia: dys. ... d-ra yuryd. nauk* [Theoretical and applied problems of expert support of pre-trial investigation: Doctoral thesis]: Field of specialization:12.00.09 Criminal Procedure and Criminology; forensic examination; operational search activity. Kharkiv : KhNUIA, p. 24 [in Ukrainian].

prophylaxis as a form of forensic-expert activity, which is connected with the use of the results of expert examinations in the prevention of crimes, administrative and public offenses[1]. However, it does not specify the organizational tactical algorithm for using the results of expert assessments in crime prevention.

According to I. V. Pyrih and V. Yu. Shepitko, the next direction in applying the results of expert activity in crime prevention is the use of technical and expert tools to prevent crimes today[2]. An analysis of the views of these scientists suggests that there are several such areas, from the development of preventive measures to the use of intelligent expert systems for the search and analysis of audio and video information.

A number of works by M. G. Shcherbakovskiy was devoted to the problem of using forensic expertise in the criminal process, as well as the implementation of its preventive function[3].

In our view, forensic expertise in today's conditions is a methodological basis not only for pre-trial investigation of criminal proceedings, but also for other stages of crime prevention: obtaining primary information on criminal activity; general and special prevention, detection and suppression of crimes. This is especially true in the form of methodological recommendations for the conduct of secret investigative (search) actions, namely:

— obtaining information on transport telecommunication networks (Article 263 of the CPC of Ukraine);

— receiving information from electronic information systems (Article 264 of the CPC of Ukraine);

— Survey of publicly accessible places, housing or other property of a person (Article 267 of the CPC of Ukraine);

— Unauthorized receipt of samples required for comparative study (Article 274 of the CPC of Ukraine).

As it is seen from the analysis of scientific developments in the field of forensic examination in the vast majority of works, the problematic issues of using the findings and results of forensic examinations in the prevention of

[1] Rossinskaya E. R. *Obshhaja teorija sudebnoj jekspertizy i kriminalistika kak samostojatel'nye rodstvennye nauki* [General theory of forensic examination and forensic science as independent related sciences]. URL: http://rossinskaya.ru/articles/ (Date accessed: 25.07.2018) [in Russian].

[2] Shepitko V. Yu. (2013) *O novellah v ispol'zovanii special'nyh znanij v ugolovnom processe Ukrainy. Teorija i praktika sudebnoj jekspertizy v sovremennyh uslovijah: materialy 4-j Mezhdunar. nauch.-prakt. konf., Moskva, 30–31 janv. 2013 g*. [About novels in the use of special knowledge in the criminal process of Ukraine. Theory and Practice of Forensic Science in Modern Conditions: Content of the 4th International Academic Conference. Moscow, January, 31 2013], Moscow : Prospekt, p. 340–342 [in Ukrainian].

[3] Sherbakovskyi M. G. (2016) *Teoretyko-metodolohichni ta prakseolohichni zasady sudovykh ekspertyz u kryminalnomu protsesi : avtoref. dys. … d-ra yuryd. nauk* [Theoretical-methodological and practical principles of judicial expertise in criminal procedure : extended abstract of Doctoral thesis]: Field of specialization:12.00.09 Criminal Procedure and Criminology; forensic examination; operational search activity. p. 34 [in Ukrainian].

crimes are considered. In our opinion, this approach is one-sided. The logic of constructing the latest model of counteraction to crime involves the use of the results of expert activity at all stages of counteraction to crimes, which will ensure the formation of its proactive nature.

Taking into account the problem of combating crime in general and crime prevention in particular, we can offer the forms of using the results and means of forensic expertise in countering crimes in the field of information security in accordance with the requirements of legislation and the content of information security and existing threats from the criminal environment.

Based on the contents of Art. 1 of the Law of Ukraine "On Judicial Examination", judicial expertise consists in studying an expert on the basis of special knowledge in the field of science, technology, art, crafts, etc. objects, phenomena and processes in order to provide an opinion on matters that are or will be subject to judicial review[1]. So, in order to conduct research, the expert must possess a number of special knowledges, determined by specific types of crimes, to establish the facts of which the examination is aimed at. Regarding the use of forensic expertise in combating cyber threats in the field of information security, it is necessary to clarify its content.

In accordance with the theoretical paradigm of information security, it is the subject of regulation of normative acts of various levels. Thus in Art. 17 of the Constitution of Ukraine states that protection of the sovereignty and territorial integrity of Ukraine, ensuring its economic and information security are the most important functions of the state, the affair of the entire Ukrainian people. Thus, one of the main functions of the state is to create an effective mechanism for detecting and neutralizing threats to Ukraine's information security.

In Art. 1 of the Law of Ukraine *On National Security of Ukraine*, defines the need for the adoption of the State Strategy of Cybersecurity of Ukraine in which it is necessary to anticipate threats to the cybersecurity of Ukraine, priorities and directions for its provision in order to create conditions for the safe functioning of cyberspace, its use in the interests of the individual, society and the state[2].

The said regulations were adopted in accordance with the Treaty of Europe on Cybercrime, signed in Budapest on November 23, 2001 (hereinafter — the Convention)[3]. This Convention has contributed to the establishment of a system for coordinating the activities of law enforcement

[1] *Pro sudovu ekspertyzu : Zakon Ukrainy* [On Judicial Examination Law of Ukraine] from 25.02.1994 № 4038–XII. Bulletin of Verkhovna Rada of Ukraine 1994. № 28. 232 [in Ukrainian].

[2] *Pro natsionalnu bezpeku Ukrainy : Zakon Ukrainy* [On National Security of Ukraine : Law of Ukraine] dated on 21.06.2018 № 2469–VIII. URL: http://zakon0.rada.gov.ua/laws/show/2469–19 (Date accessed: 25.07.2018) [in Ukrainian].

[3] *Pro ratyfikatsiiu Konventsii pro kiberzlochynnist : Zakon Ukrainy* [On Ratification of the Convention on Cybercrime : Law of Ukraine] dated on 07.09.2005 № 2824–IV. Bulletin of Verkhovna Rada of Ukraine 2006. № 5. Art: 71 [in Ukrainian].

agencies of Europe in countering computer crimes and criminalizing racist and xenophobic acts committed through computer systems. Determining the legal and organizational factors of each structural element of combating crime in general and cybercrime in particular can be through the elucidation of its theoretical and applied content. In addition, the requirement of the Convention was to improve the national legislation in the field of information security in accordance with the requirements of world standards for the provision of public interests, human rights and freedoms.

Taking into account the norms of the Convention, in the current Doctrine of Information Security of Ukraine, Ukraine's main national interests in the information sphere are divided into vital interests of the individual and vital interests of society and the state. The first group consists of: ensuring the constitutional rights and freedoms of people for the collection, storage, use and dissemination of information; ensuring constitutional human rights for the protection of private life; protection against destructive information and psychological influences[1].

The second group consists of: full satisfaction of the needs of citizens, enterprises, institutions and organizations of all forms of ownership in access to reliable and objective information; development and protection of national information infrastructure; formation of an effective legal system for protection of individuals, society and the state from destructive propaganda influences; safe functioning and development of the national information space and its integration into the European and world information space; ensuring the development of information and communication technologies, information resources of Ukraine, etc.

Taking into account the specified legal acts and drawing on the analysis of the opinions of scientists in the field of information security, one can distinguish the main types of threats to national security in the information field:

— cybercrime;

— information terrorism;

— disclosure of information constituting state and other statutory, secrecy, as well as confidential information that is the property of the state or aimed at ensuring the needs and national interests of society and the state;

— attempts to manipulate public opinion, in particular by disseminating inaccurate, incomplete or biased information;

— manifestations of restriction of freedom of speech and access of citizens to information and other their rights and freedoms;

[1] *Pro rishennia Rady natsionalnoi bezpeky i oborony Ukrainy vid 29 hrudnia 2016 roku «Pro Doktrynu infor-matsiinoi bezpeky Ukrainy: Ukaz Prezydenta Ukrainy* [On the decision of the National Security and Defense Council of Ukraine] dated December 29, 2016 "On the Doctrine of Information Security of Ukraine: Decree of the President of Ukraine dated January 25, 2017, № 47 URL: https://www.president.gov.ua/ documents/472017–21374 (Date accessed: 25.07.2018).

— dissemination in the media of a cult of violence, cruelty, pornography and other manifestations of immorality;

— spread of ideologies and the influence of destructive noctules;

— it is dangerous for Ukraine's economic independence to increase the share of foreign capital in strategic sectors of the economy related to the information field;

— Inspiration of other destructive processes in the information sphere of our state[1].

These threats are transformed into specific crimes, which determine the organizational and tactical peculiarities of the implementation of all components of the counteraction, including the conduct of appropriate examinations. Analysis of the criminological situation in the area of cyberspace shows that only in the six months of 2018 the bodies of the cyberpolice revealed 2,3 thousand offenses in this area. The most widespread illegal actions are unauthorized interference with the work of information and telecommunication systems (ITS). Operators and investigators must have methods of detecting identified unlawful acts and objects that may be the subject of investigations in the course of carrying out operational search activities and secret investigatory actions during criminal proceedings. The theoretical basis for such techniques should be the expert conclusions and recommendations of the corresponding techniques on the basis of the works of such scholars as Yu. V. Gavrilin, V. A. Golubev, S. M. Gusarov, V. O. Vityuk, A. P. Voitovich, V. A. Kaplun, V. V. Krylov, L. M. Solovyov, T. L. Tropin, V. S. Tsimbalyuk and others. However, the question of defining a conceptual apparatus in this area is not fully explored[2].

An analysis of scientific developments in recent years suggests that the complexity of generalizing empirical material is that techniques for detecting such interventions with the use of malicious software (Malware) are of a closed nature and are mainly developed by the relevant units of the e Security Service of Ukraine[3]. However, a significant amount of computer-technical

[1] *Zahrozy natsionalnii bezpetsi derzhavy v informatsiinii sferi* [Threats to the national security of the state in the information field]. URL: https://pidruchniki.com/1834071936975/politologiya/ (Date accessed: 25.07.2018) [in Ukrainian].

[2] Parfyro O. A. Nizovtsev Yu. Yu. (2016) *Aktualni pytannia sudovo-ekspertnoho doslidzhennia shkidlyvykh prohramnykh zasobiv u mezhakh protydii kiberte-roryzmu. Kryminalistychnyi visnyk* [Topical issues of forensic expert research of malicious software in the framework of counteraction to cyberterrorism. Kryminalistychnyi visnyk]. № 1(25). P. 78–84 URL: elar.naiau.kiev.ua/bitstream/ (Date accessed: 25.07.2018) [in Ukrainian].

[3] Nizovtsev Yu. Yu. (2016) *Shchodo problem prytiahnennia do kryminalnoi vidpovidalnosti osib za nezakonni dii zi spetsialnymy prohramnymy zasobamy nehlasnoho otrymannia informatsii. Pravove zabezpechennia operatyvno-sluzhbovoi diialnosti: aktualni problemy ta shliakhy yikh vyrishennia: materialy postiino diiuchoho nauk.-prakt. seminaru* [Concerning the problems of bringing to criminal responsibility individuals for illegal actions with special software tacitly receiving information. Legal support of operational and service activities: actual problems and ways to solve them: Content of constantly acting scientific training], Kharkiv, 27 May. 2016, Kharkiv : Pravo, Issue 7. P. 301–304 [in Ukrainian].

expertise is carried out by the staff of the relevant laboratories of research institutes of forensic examinations of the Ministry of Justice of Ukraine.

Today, regulations on the provision of cyber security in Ukraine have a number of inconsistencies regarding the concept and terminology apparatus, especially in relation to specific types of judicial expertise, signs of unauthorized interruption in the work of ITS; Recommendations for finding, detecting, fixing and removing these objects.

The study of scientific achievements in the field of the use of forensic examinations on the facts of unauthorized interruptions in the work of the ITS allows us to determine that in order to ensure the formation of effective organizational tactical models of ORZ — HC (P) D in order to detect such illegal actions through remote attacks using SPS, it must be fixed in expert methods the classification of such unauthorized procedures and the classification of the Malware with the definition of the characteristics of each method of remote attack for denial of service and the characteristics of Malware.

The analysis of scientific works of experts of the Security Service of Ukraine shows that today there is no single opinion on the definition of the term "harmful software", and as a result of the lack of a unified approach to conducting forensic examinations to identify the signs of their application. From the above, we can state that in various cases, court experts draw conclusions based on their own discretion, knowledge and practical experience, and as a result different expert can draw different conclusions.

Studying the experience of the cyberpolice of the state of emergency of Ukraine and the Security Service of Ukraine allows to determine that one of the widespread crimes of the use of Malware is the theft of confidential data[1].

To date, there are no modern methods for identifying specific SPS software. As a result, there is no unification of the methods and the development on their basis of recommendations for investigators and operatives on the conduct of the ORZ — NS (P) D in order to identify objects with SPS and the definition of issues that need to be resolved through forensic examinations.

From the above we can state that:

— counteraction to crimes in the field of information security structurally consists of the following stages: the search for primary information on criminal activity in the information sphere; prevention of cybercrime; detection of unlawful actions in the field of information security in the course of operational investigation and the implementation of the ORZ;

[1] *Kiberpolitsiia vykryla pratsivnyka vyshu, yakyi rozpovsiudzhuvav ShPZ ta zaimavsia maininhom kryptovaliuty za rakhunok derzhavnoho universytetu* [The cyberpolice exposed a high school employee who distributed the Malware and was involved in the property criminology exchange at the expense of the state university]. URL: https://cyberpolice.gov.ua/news/ (Date accessed 09.02.2018) [in Ukrainian].

pre-trial investigation of criminal proceedings and implementation of the National Assembly (P) D within its borders;

— forensic expertise is an important part of the system of counteracting crimes in the field of information security and the methodological basis for the formation of an organizational-tactical model of operative and prosecution and criminal proceedings;

— the counteraction to cyber threats in the field of information security in Ukraine should be based on a systematic and integrated approach to the use of all structural elements of the law enforcement system, coordination of all actors, including court experts, with appropriate development of scientifically substantiated effective methods of prevention, detection and investigation. crimes;

— the theoretical basis for the formation of a systematic approach to counteracting crimes in this area is the implementation of scientific research in theoretical and applied branches of legal science: Criminalistics, theory of forensic science, theory of operational and investigative activities, the theory of intelligence and counterintelligence.

МІСЦЕ СУДОВИХ ЕКСПЕРТИЗ У СИСТЕМІ ПРОТИДІЇ КІБЕРЗАГРОЗАМ У СФЕРІ ІНФОРМАЦІЙНОЇ БЕЗПЕКИ УКРАЇНИ

А. А. Русецький

Здійснено аналіз наукових думок щодо змісту протидії кіберзагрозам у сфері інформаційної безпеки України, визначено місце й функції судової експертизи в цій діяльності. Уточнено зміст експертної профілактики та з'ясовано функції-завдання, що вирішуються під час виявлення злочинів із втручання в роботу інформаційно-телекомунікаційних систем. Надано рекомендації щодо напрямів здійснення наукових досліджень для формування теоретичного підґрунтя використання судових експертиз у протидії кіберзагрозам.

Ключові слова: кіберзагрози, інформаційна безпека, шкідливе програмне забезпечення, протидія злочинам, комп'ютерно-технічна експертиза, несанкціоноване втручання в роботу інформаційно-телекомунікаційних систем.

МЕСТО СУДЕБНЫХ ЭКСПЕРТИЗ В СИСТЕМЕ ПРОТИВОДЕЙСТВИЯ КИБЕРУГРОЗАМ В СФЕРЕ ИНФОРМАЦИОННОЙ БЕЗОПАСНОСТИ УКРАИНЫ

А. А. Русецкий

Проанализированы теоретические разработки и практический опыт противодействия киберугрозам в сфере информационной безопасности Украины. Определено, что противодействие преступлениям в сфере информационной безопасности структурно состоит из нескольких стадий. К ним относятся: поиск первичной информации о преступной активности в информационной сфере; профилактика киберпреступлений; выявление противоправных действий в сфере информационной безопасности в ходе оперативно-розыскных мероприятий и досудебного расследования уголовного производства. Наиболее распространенными противоправными действиями в сферы информационной безопасности являются несанкционированные вмешательства в работу информационно-

телекоммуникационных систем. Для выявления этих преступлений во время проведения оперативно-розыскных мероприятий в рамках уголовного производства оперативные работники и следователи должны владеть приемами обнаружения указанных противоправных действий и объектов, которые могут быть предметом исследований. Теоретическими основами рекомендаций по поиску, обнаружению, фиксации и изъятию этих объектов должны быть соответствующие криминалистические методики. Правовым основанием формирования таких методик должны быть законодательные и ведомственные нормативные акты. Однако в ряде нормативно-правовых актов, имеющих отношение к обеспечению кибербезопасности в Украине, есть несогласованности понятийного аппарата, особенно в отношении конкретных видов объектов судебной экспертизы, признаков несанкционированных вмешательств в работу информационно-телекоммуникационных систем. Выяснено, что противодействие киберугрозам в сфере информационной безопасности в Украине должно основываться на системно-комплексном подходе к использованию всех структурных элементов, координации деятельности его субъектов, в том числе и судебных экспертов. Теоретическим основанием формирования системно-комплексного подхода противодействия преступлениям в этой сфере является осуществление науковедческих исследований теоретико-прикладных отраслей юридической науки: криминалистики, теории судебной экспертизы, теории оперативно-розыскной деятельности.

Ключевые слова: киберугрозы, информационная безопасность, вредоносное программное обеспечение, противодействие преступлениям, компьютерно-техническая экспертиза, несанкционированное вмешательство в работу информационно-телекоммуникационных систем.

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INFORMATION SYSTEMS IN FORENSIC SCIENCE ACTIVITY

Theoretical problems of the use of information systems in forensic expert research are considered. Positions and approaches of scientists to the definition of the concept and essence of the theoretical category "information", are analyzed. As a result of the generalization of the experience of the judicial-expert institutions of Ukraine, statistical data, materials of contemporary expert practice and professional literary sources, the author's definition of information activity of a court expert is given. Proposed measures aimed at increasing the efficiency of the use of information in forensic research.

Keywords: information systems, forensic expert researches, information technologies, informational support, expert systems, forensic information.

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Current stage of development of forensic expertise is characterized by high dynamism, active influence on its development of scientific and technological progress, purposeful and active search for effective ways to improve expert practice on a fundamental theoretical basis. Main features of the judicial research at the present stage can be attributed to their high level of knowledge, the use of achievements of cybernetics, which, integrating in forensics and forensic expertise, serve as a catalyst for the further development of its traditional means and methods based on the achievements of the natural sciences, technical sciences and the humanities. Considerable influence of informatics on forensic expert practice is conditioned, firstly, by the optimization of cognitive processes; and secondly, further automation of expert activity; and thirdly, rationalization of the decisions taken using information systems, etc. Cybernetics has made not only a very productive information approach, which allowed to expand the possibilities of almost all types of expertise, but also opened the way for automation of expertise. The development of special information systems containing data on the identification and diagnostic value of attributes, the properties of most objects of expert research, algorithmic and heuristic methods for solving expert tasks is actively being developed. Computer technology allows the most extensive use of these databases to experts working in an expert institution and even conducts research on-site. The theory and practice of expertise penetrate the system approach, techniques of structural and system analysis. One of the promising ways to improve identification processes is the use of information theory. Informational approach allows: to outline the ways of analysis and to evaluate the loss of information about identifying features at different stages of their reflection; use mathematical apparatus for the analysis of not only systematic and general, but also random and local distortions of signs and other information losses based on a single, universal approach to them; to reduce the inaccuracy of expert representations about the nature of the signs.

According to scientists, information is a neutral (intermediate) factor between the spirit and matter[1]. We fully agree with this, because it was information that played an important role in the work of a person who uses language in communication and is more knowledge-driven. Therefore, the state contributes to the development of the Ukrainian language as the main tool for transforming knowledge accumulated by humanity into an information resource.

[1] Novik I. B. (1963) *Kybernetyka: Fylosofskye y sotsyolohycheskye problemy* [Cybernetics: Philosophical and sociological problems]. Moscow, p. 61; Yankov M. (1985) *Konfrontacija mezhdu materializmom i idealizmom po probleme informacii. Informacija i upravlenie. Filosofsko-metodologicheskie aspekty* [Confrontation between materialism and idealism on the problem of information. Information and management. Philosophical and methodological aspects]. Moscow, p. 9 [in Russian].

Despite the rich practice of using information flows in the intellectual activity of a modern person and the broad theoretical development of this scientific category, there is currently no consistent definition of the concept of "information". Thirdly, a large number of operators that exchange (distribute) information; fourthly, the rapid development of modern communication communications and technologies, etc. Essence of the category under consideration is strongly influenced by the lack of a unified, unified scientific language (that means the concept is used within the framework of the science in which it is applied). Specialists no longer satisfy the old definition of information; they need more specific features of it.

There are many definitions of information, each of which reflects the specificity of the field of knowledge, which uses a definition, or features of the professional activity of the person who gave or suggested the definition, or just his personal taste and terminological inclinations[1].

Regulatory definition of the term "information", is found in many valid acts, a significant part of which is made up of the laws of Ukraine. However, only the three existing laws contain the very definition of the category "information". In particular, it is the laws of Ukraine *On Information*, *On Protection of Economic Competition*, *On Telecommunications*, DSTU 2392–94 *Information and Documentation. Basic concepts. Terms and definitions*.

According to Art. 1 of the Law of Ukraine *On Information* is understood as documented or publicly disclosed information on events and phenomena occurring in the society, the state and the natural environment[2].

In the Law of Ukraine *On the Protection of Economic Competition* information is information in any form and form and stored on any medium (including correspondence, books, notes, illustrations (maps, diagrams, drawings, diagrams, etc.), photographs, holograms, cinema, video, microfilm, sound recordings, computer system databases, or full or partial reproduction of their elements), explanations of persons and any other publicly disclosed or documented information[3].

The Law of Ukraine *On Telecommunications* states that information is information provided in the form of signals, signs, sounds, movable or immovable images or otherwise (Article 1)[4].

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[1] Kohan V. Z. (1991) *Teorija informacionnogo vzaimodejstvija: filosofsko-sociologicheskie ocherki* [Theory of information interaction: philosophical and sociological essays]. Novosibirsk : Publishing house of Novosibirsk University, p. 114–115 [in Russian].

[2] *Pro informatsiiu : Zakon Ukrainy* [On Information : Law of Ukraine], dated on 02.10.1992 № 2657–XII. Database Legislation of Ukraine. URL: http://zakon3.rada.gov.ua/laws/show/2657–12.

[3] *Pro zakhyst ekonomichnoi konkurentsii : Zakon Ukrainy* [On the Protection of Economic Competition : Law of Ukraine], dated on 11.01.2001 № 2210–III. Ibidem. URL: http://zakon5.rada.gov.ua/laws/show/2210–14 [in Ukrainian].

[4] *Pro telekomunikatsii : Zakon Ukrainy* [On Telecommunications : Law of Ukraine], dated on 18.11.2003 № 1280–IV. Ibidem. URL: http://zakon2.rada.gov.ua/laws/show/1280–15 [in Ukrainian].

In DSTU 2392–94 information is knowledge that is considered in the aspect of communication[1].

Analyzing the terminology of the above-mentioned normative legal documents, despite the lack of clarity in the interpretation of this term, it is possible to note a number of common features, the main of which is that the domestic legislator considers information primarily to be "information". Therefore, it can be argued that information is first and foremost any information (collection thereof) obtained from the external environment, stored in any form and form on any medium and presented in any way to eliminate uncertainty.

When they speak the language of information, they have in mind the following properties: information is reliable, if it does not distort the true state of phenomena, processes, facts, events; information is complete if it is sufficient for understanding and making informed decisions; the information is clear and understandable if it is expressed in the language that is communicated (understood by) by those for whom it is intended; quality of information — a set of properties that determine the possibility of its use to meet the needs determined in accordance with its purpose; value — a comprehensive indicator of the quality of information, its size at the pragmatic level, which determines its usefulness, value for making a decision; The adequacy of information is a certain level of compliance, which is created using the information received, the image of a real object, process, phenomenon, etc[2].

While investigating the properties of information, one should emphasize the specifics of the legal regulation of social relations in relation to information, that is, its legal properties.

First, the physical inalienability of information lies in the fact that the information is not able to alienate from the person of its carrier. In a broader interpretation, this property can be transferred to legal entities, subjects of information relations. During the transmission (dissemination) of information from one person to the other, it can remain in both, even the information producer, for the most part, retains a complex of copyright information.

Secondly, the need to separate information requires that information be separated from its maker by way of presentation in the form of signals, signs, sounds, movable or immovable images, or otherwise, and in such form is transferred to another subjects of information relations.

[1] *DSTU 2392-94 «Informatsiia i dokumentatsiia. Bazovi poniattia. Terminy ta vyznachennia». Vydannia ofitsiine* [DSTU 2392–94 Information and documentation. Basic concepts. Official edition]. Kyiv : Ministry of Economic Development and Trade of Ukraine (with amendments and supplements)

[2] *Informatsiini tekhnolohii v yurydychnii diialnosti: bazovyi kurs: navch. posibnyk / O. V. Spivakovskyi, M. I. Sherman, V. M. Stratonov, V. V. Lapinskyi* (2012) [Information technology in legal activity: basic course: tutorial / O. V. Spivakovskyi, M. I. Sherman, V. M. Stratonov, V. V. Lapinskyi]. Kherson : KhSU, p. 17 [in Ukrainian].

Thirdly, the independence of the rights to information and its material carrier is the legal property of information protected by the right of intellectual property, that the information on the carriers at the same time is information (content) and material carrier. In a more general sense, it may be noted that the right to information and ownership of a material medium of information do not depend on each other. Alienation of the material carrier does not mean the alienation of the right to information and vice versa.

Fourthly, the ability to replicate is a property of information that is directly related to its characteristics, such as inexhaustibility. This property is key to the legal regulation of the activities for the dissemination of information, since the latter can be copied (replicated) an unlimited number of times, and at the same time it does not decrease in volume and does not lose its consumer qualities[1].

As for the forms of information submission, we note that the information may contain messages that are transmitted in two forms — analog and discrete. *Analog* or continuous form of message submission is the value of a particular physical quantity characterizing a process that does not have interruptions or intervals (for example, the speed of a car in a definite path area). *Discrete* form of message submission is a sequence of characters that characterizes a discontinuous chain of events (for example, the number of studies conducted by the expert at a different time interval).

Regarding the scientific definition of this notion, we emphasize that one of the first who investigated the essence of the influence of information on the development of society and proposed the definition of information was the American mathematician N. Viner. In his works, he emphasized that information is a definition of the content received from the outside world in the process of our adaptation to it and adapting our feelings to it. The process of obtaining, using information is the process of our adaptation to the contingencies of the environment and our life in the external environment. The application of general laws of the theory of philosophy has allowed to know the natural essence of information. A well-known scholar-philosopher V. A. Shtof, under the information, understood a certain characteristic of reflection as a result of the fact that reflection is a general property, an attribute of matter, and is always characterized by organization. The information, he said, acts as a definite reflection characteristic, because reflection is a general attribute of matter and is constantly characterized by organization[2].

After analyzing the above concepts, we cannot but agree with the experts that the category of reflection is the key that allowed to open the nature of information. Specifying content led to the simultaneous expansion of the

[1] *Informatsiine pravo* [Information law]. URL: http://studies.in.ua/inform-pravo-shporu/2502–yuridichn-osoblivost-nformacyi.html [in Ukrainian].

[2] Shtoff V. A. (1996) *Modelirovanie i filosofija* [Modeling and philosophy]. Leningrad : Nauka, p. 119–120 [in Russian].

scope of the concept of "information", and began to characterize not only the aspect of human communication, but also communicative phenomena in technology, biological and other processes. Information is projected onto the "knowledge screen", associated with such concepts as erudition and creative abilities of the individual, which is extremely important for making managerial decisions[1].

Information is considered as a strategic product, it is the basis of management activity, reflects not only the conditions of existence, quality, patterns, features of the object, the functioning of the subject, but also the management system in general, with its elements in particular[2].

In theory of exact sciences, in particular mathematics, there is another, different from the philosophical, approach to understanding the nature of information. Information in cybernetics is understood to mean any set of signals, influences or information that some system employs from the environment (input information), gives it to the environment (source information), or ultimately retains (internal, intra-system information)[3].

In the theory of legal sciences, the study of legal phenomena is closely linked with the development of a separate general scientific information approach, which resulted in a new direction, which combines the science of criminology with information processes[4]. At the same time, some scientists associate the notion of "information", with such concepts as "data", "information", "message", "knowledge", etc. Due to this, in the theory of legal sciences, such concepts as "legal / legal[5]" "evidence"[6], "orienting[7]" "forensic"[8], "operative-search",[9] information, etc.

[1] Ursul A. D. (1975) *Problema informacii v sovremennoj nauke* [Problem of information in modern science]. Moscow : Nauka, p. 114 [in Russian].

[2] Piliukov V. O. (2009) *Vykorystannia informatsiinykh system v ekspertnykh pidrozdilakh MVS Ukrainy: dys. … kand. yuryd. nauk* [Use of information systems in the expert divisions of the Ministry of Internal Affairs of Ukraine : Candidate of science dissertation]: spec. 12.00.09. Kyev, p. 19.

[3] Dombrouskaite O. K. Yhnateva Yu. Ya. Lantsman R. M. (1966) *Analiz nekotoryh rezul'tatov ispol'zovanija JeVM dlja differenciacii blizkih po harakteristikam dvizhe-nij pocherkovyh ob"ektov. Kibernetika i sudebnaja jekspe* [Analysis of some results of computer use for the differentiation of the handwriting movements that are close in their characteristics. Cybernetics science and criminalistics]. Vilnius: RIFE, Issue 2. P. 190 [in Russian].

[4] Saltevskyi M. V. (1965) *Identifikacija i informacija. Pravovedenie* [Identification and information. Jurisprudence]. № 3. P. 84–90 [in Russian].

[5] Information technology in legal activity: basic course.

[6] Belkin A. R. (1999) *Teorija dokazyvanija: nauch.-metod. posobie* [Theory of proof: Scientific and methodical textbook]. Moscow : NORMA, p. 173 [in Russian].

[7] Patskevych A. P. (2003) *Avtomatizirovannye sistemy kak jelement struktury informacionno-kriminalisticheskogo obespechenija raskrytija i rassledovanija pre stuplenij. Probl. kriminalistiki : sb. nauch. tr*. [Automated systems as an element of the structure of the information-forensic provision and disclosure of investigations. Probl. of criminalistics Collection of scientific papers]. Minsk : Academy Ministry of Internal Affairs of Belarus, p. 182 [in Russian].

[8] *Kryminalistyka : pidruchnyk* (1997) [Criminalistics : manual] / P. D. Bilenchuk, O. P. Dubovyi, p. Yu. Tymoshenko, M. V. Saltevskyi. Kyiv : National Academy of Internal Affairs, p. 143–146 [in Ukrainian].

[9] Kovalenko E. D. (2007) *Vykorystannia operatyvnoi informatsii yak pidstavy dlia zastosuvannia zakhodiv protsesualnoho prymusu u kry-minalnomu sudochynstvi: avtoref. dys. ...*

Information in legal activity is information about the surrounding world (objects, phenomena, events, processes, etc.) that reduce the existing uncertainty, incompleteness of knowledge that can be transmitted orally, in writing or otherwise, as well as by conditional signals, technical and computing tools, etc[1]. Information about a particular object, a phenomenon occurs when there is an interpretation of the data received in the form of a statement about the status of the object. M. V. Saltevsky refers to information that is turning in the field of crime investigation, as criminalistic and draws attention to its specific features: it is used in conjunction with other types of information, creating a system that permits the establishment of the circumstances of the crime; it has a dominant role in the information system; the investigator receives her due to investigative actions, as well as operational-search activities[2].

Information in the area of forensic expertise is derived from legal information, but has several individual characteristics. Based on this, information in the field of forensic expertise is a collection of information about material objects, facts, phenomena and processes that contain information about the circumstances of criminal activity and are investigated by an expert using special knowledge.

Despite the fact that the very term “information”, refers to the abstract, it is always manifested in the material-energy form, in particular in the form of signals. Supporting V. O. Pilyukova's argument about this, we emphasize that the signal may have different physical nature; in the information process, it performs the function of the carrier of information from its source to the receiver and then to the addressee.

The basis for the study of information processes in forensic expertise is the position of a new field of knowledge — information epistemology, which considers knowledge from the point of transformation and information transformation (epistemology (Greek επιστήμη — knowledge, λόγος — doctrine) — a philosophical and methodological discipline in which knowledge is studied as Such is its structure, structure, functioning and development. The term was introduced and actively used in the Anglo-American philosophy of the XX century. Traditionally identified with the theory of knowledge. However, in a non-classical philosophy, a tendency to distinguish between epistemology and epistemology,, based on the initial categorical opposition, may be recorded. If epistemology deploying their

kand. yuryd. nauk [The use of operational information as a basis for the application of measures of procedural coercion in criminal proceedings : extended abstract of Candidate of science dissertation]: spec. 12.00.09. Kyiv, p. 20 [in Ukrainian].

[1] Information technology in legal activity: basic course: p. 17.

[2] Saltevskiyi M. V. (1996) *Kriminalistika. V sovremennom izlozhenii juristov* [Criminalistics. In modern presentation by lawyers]. Kharkov : Rubikon, p. 142–143 [in Russian].

ideas around the opposition "subject — object", then basic epistemology opposition is "object — knowledge").

For the forensic expertise interest are the application of information systems and processes of information transformation, which is a prerequisite for its functioning. Depending on the specific conditions, features of the source information, the number of its intermediate receivers and consumers, the process of transferring information, its movement from source to final destination can be multi-stage; the information signal and each of the intermediate elements of this circuit can change the physical nature and nature of the devices used. In this connection, issues such as isomorphic (mutual uniqueness) of information and its signal, completeness and objectivity of transmission, the ability (ability) of its perception by the receiving entity or technical device are very relevant in the general problem of optimization of information processes.

Information processes is a consistent change in status and / or representation of information as a result of actions that can be performed with. In general, the scheme of information transmission can be represented as follows: the source of information — the transmission of information (transmission channel) — the receiver of information.

Article 14 of the Law of Ukraine "On Information", stipulates that the main types of information activity are the receipt, use, distribution and storage of information[1]. Receipt of information is the acquisition, acquisition, accumulation in accordance with the current legislation of Ukraine of documented or publicly disclosed information by citizens, legal entities or the state. The use of information is the satisfaction of the information needs of citizens, legal entities and the state. The dissemination of information is the dissemination, disclosure, implementation of documented or publicly disclosed information in accordance with the law. Storing information is to ensure the proper condition of the sources of information (documents, information) and their material carriers.

Based on the information provided in normative legal acts, professional literary sources and materials of the conducted researches, we will formulate the definition of information activity of forensic expert. Thus, *under the information activity of a court expert means a set of acts based on laws and subordinate regulatory acts aimed at obtaining information on research objects provided to an expert for conducting forensic examinations, through the implementation of a set of information retrieval, information and communication and informational and analytical measures and avoiding misinformation in order to draw an objective, impartial and competent conclusion.*

[1] *Pro informatsiiu : Zakon Ukrainy* [On Information : Law of Ukraine], dated on 02.10.1992 № 2657–XII [in Ukrainian].

In conducting information activities, the judicial expert is free to choose the methods of investigation, methods of conducting forensic examinations, as well as regulations and regulatory documents (international, national and industry standards, technical specifications, rules, norms, regulations, instructions, recommendations, lists, etc.). as well as scientific, technical, reference books, software products, etc. That is, in the mind of the expert there is a complicated work, based on the set of signals, each of them has its own individual characteristics. At the same time, the rate of passage of the nerve impulse from the neuron to the neuron may vary depending on the existing circumstances. In addition, while carrying out professional activities, the expert treats a considerable amount of heterogeneous, often incomplete information and makes decisions without encountering the problem of functional blocks. In a computer, the transmission of signals is based on electrical impulses and a completely stable, logical and complete information array. In the presence of certain "gaps", the machine is not able to process all data and provide a well-grounded analysis of the information.

In the presence of certain "gaps", the machine is not able to process all data and provide a well-grounded analysis of the information. Essence of this stage consists of the demonstration of various kinds of images containing the characteristics of the source information. They can be both qualitative and quantitative, achieved through the use of various technical devices, in particular indicators (digital, graphic recording devices), displays that are now more widespread. They allow the creation of a human-machine information system in which it is possible to use a computer in the so-called dialog mode[1].

A special stage in the information activity of a court expert is the process of storing information, which implies the implementation of a set of actions to restrict access to the final information of third parties (its loss, damage) and timely receipt of the persons who appointed (ordered) an examination.

The positive influence of the use of informatics in expert practice is achieved, firstly, through the rationalization of cognitive procedures; and secondly, by improving the automation of activities; thirdly, by optimizing the adoption of complex solutions using knowledge-based systems.

Thus, information provision of forensic expert activity is a system of scientifically organized and continuous process of selection, preparation and issuance of systematic scientific and technical information necessary for solving forensic and expert tasks.

ІНФОРМАЦІЙНІ СИСТЕМИ В СУДОВО-ЕКСПЕРТНІЙ ДІЯЛЬНОСТІ

Н. Є. Філіпенко

Розглянуто теоретичні проблеми використання інформаційних систем у судово-експертних дослідженнях. Проаналізовано позиції та підходи вчених до

[1] Piliukov V. O. Papers mentioned above, p. 28.

визначення поняття й сутності теоретичної категорії «інформація». За результатами узагальнення досвіду роботи судово-експертних установ України, статистичних даних, матеріалів сучасної експертної практики та фахових літературних джерел наведено авторське визначення інформаційної діяльності судового експерта. Запропоновано заходи, спрямовані на підвищення ефективності використання інформації в судово-експертних дослідженнях.

Ключові слова: інформаційні системи, судово-експертні дослідження, інформаційні технології, інформаційне забезпечення, експертні системи, криміналістична інформація.

ИНФОРМАЦИОННЫЕ СИСТЕМЫ В СУДЕБНО-ЭКСПЕРТНОЙ ДЕЯТЕЛЬНОСТИ

Н. Е. Филипенко

Рассмотрены теоретические проблемы использования информационных систем в судебно-экспертных исследованиях. Приведены основные особенности судебно-экспертных исследований на современном этапе, к которым можно отнести их высокую наукоемкость, использование достижений кибернетики, которые, интегрируясь в криминалистику и судебную экспертизу, выступают катализатором дальнейшего развития ее традиционных средств и методов на основе достижений естественных, технических и гуманитарных наук. Большое влияние информатики на судебно-экспертную практику обусловлено оптимизацией познавательных процессов, дальнейшей автоматизацией экспертной деятельности, рационализацией принятых решений с использованием информационных систем и т. п. Несмотря на насыщенную практику применения информационных потоков в интеллектуальной деятельности современного человека и широкую теоретическую разработку этой научной категории, сегодня нет постоянной дефиниции понятия «информация». Это объясняется разнообразием сфер применения информации, многовекторностью информационных потоков, большим количеством операторов, обменивающихся сведениями; бурным развитием современных коммуникационных связей и технологий. Информация в сфере судебно-экспертной деятельности является производной от правовой информации, но имеет ряд индивидуальных особенностей. Исходя из этого, под информацией в сфере судебно-экспертной деятельности понимается совокупность сведений о материальных объектах, фактах, явлениях и процессах, которые содержат данные об обстоятельствах преступной деятельности и исследуются экспертом с применением специальных знаний. На основании анализа мнений ученых сформулировано дефиницию информационной деятельности судебного эксперта, под которой понимается основанный на законах и подзаконных нормативных актах комплекс действий, направленных на получение информации об объектах экспертного исследования, путем осуществления совокупности информационно-поисковых, информационно-коммуникативных и информационно-аналитических мероприятий с целью составления компетентного заключения.

Ключевые слова: информационные системы, судебно-экспертные исследования, информационные технологии, информационное обеспечение, экспертные системы, криминалистическая информация.

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WAYS OF IMPROVING THE QUALITY OF TRAINING FOR CHILDREN FOR JUDICIAL EXPERT INSTITUTIONS OF THE MINISTRY OF JUSTICE OF UKRAINE

The issue of the need for reforming and improving the quality of training and staff training for the judicial-expert institutions of the Ministry of Justice of Ukraine is considered. The historical aspects of postgraduate studies in the offices of scientific and judicial expertise in Ukraine are described. The ways of solving problems connected with the preparation of scientific personnel of higher qualification are given.

Keywords: personnel training, quality system, forensic examination, forensic expert institutions, judicial expert.

The dynamic development of forensic expertise in Ukraine, the introduction of new technologies by the judiciary expert institutions of the Ministry of Justice, as well as the growth of the requirements for the quality of conducting forensic examinations, determine the urgency of the tasks aimed at improving the training of highly skilled scientific personnel for the needs of forensic expert activity. Currently, the issues of training specialists of forensic institutions of the Ministry of Justice of Ukraine and specialists who are not employees of these institutions, as well as training of scientific staff of higher qualification is one of the priorities in solving the tasks of reforming forensic examination, aimed at its further development and improving the quality of expert research.

The professional and qualification requirements of a forensic expert are set out in the Law of Ukraine *On Judicial Examination*. In Art. 10 of this Law states that judicial experts may be persons who have the necessary knowledge to provide an opinion on the issues under investigation. Forensic experts of state specialized institutions may be specialists who have the appropriate higher education, educational qualification level not lower than a specialist, have been trained and qualified for a judicial expert in a particular specialty. Forensic experts may also be involved in judicial examinations who are not employees of these institutions, provided that they have the appropriate higher education, educational qualification level not lower than the specialist, have been trained in the state specialized institutions of the Ministry of Justice of Ukraine, have been certified and qualified forensic expert on a particular specialty.

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In Art. 21 of this Law states that the training of specialists for state specialized institutions conducting forensic examinations is carried out by higher educational institutions; Specialization and advanced training are carried out at courses and in special institutions of relevant ministries and other central executive bodies. Specialists who are not employees of state specialized institutions and whose purpose is to carry out expert activities are trained in an appropriate expert specialty in the state specialized institutions of the Ministry of Justice of Ukraine.

The study of the needs for training, specialization and professional development of experts, as well as the development of proposals for meeting these needs, are carried out by ministries and other central executive authorities, whose areas of management are state specialized institutions that carry out forensic activities. The need for qualitative training of specialists in higher qualification is due to the urgent need for judicial expert work, which is currently in existence.

The scientific works of scholars of Ukraine and other states consider the main problems and tendencies of scientific discussion on the improvement of the postgraduate study, the main approaches to the search and election of management decisions in the organization of postgraduate studies, modern approaches to the organization of the work of highly skilled personnel in higher educational institutions, universities, as well as other issues, related to postgraduate study[1]. However, the issue of the need to establish a graduate

[1] Vynnytskyi M. *Reforma aspirantury. Osoblyvosti vprovadzhennia prohram pidhotovky fakhivtsiv iz stupenem doktora filosofii* [Postgraduate Reform Features of introduction of programs of preparation of specialists with the degree of doctor of philosophy]. URL: http://bit.ly/209beAt; Bolshova N. N. (2010) *Aspirantura: opyt universitetov Zapada* [Postgraduate study: experience of universities in the West]. URL: http://old.mgimo.ru/news/university/document160572. pdf (access date: 04.06.2018); Yhnatov I. I. (2010) *Podderzhanie zhiznesposobnyh nauchno-prepodavatel'skih kollektivov v amerikanskih universitetah. Jekonomika obrazovanija* [Maintenance of viable academies in American Universities. Education Economics]. № 2; Husev A. B. (2015) *Rol' aspirantury v vosproizvodstve nauchnyh kadrov. Al'manah «Nauka. Innovacii. Obrazovanie»* [Role of post-graduate studies in the reproduction of scientific staff. Almanac "Science. Innovations Educations"]. № 17; Bednyi B. Y. Myronos A. A. Serova T. V. (2010) *Metodika ocenki jeffektivnosti podgotovki nauchnyh kadrov v aspiranture. Vestnik Nizhegorod. un-ta im. N. I. Lobachevskogo* [Methodology for evaluating the effectiveness of scientific staff training in postgraduate study. Bulletin of Lobachevsky State University of Nizhny Novgorod]. № 5 (1); Platonova N. A. (2011) *Sovremennye podhody k organizacii vosproizvodstva kadrov vysshej kvalifikacii v aspiranturah vuzov. Vestnik associacii vuzov turizma i servisa.* [Vapniarskaia O. I. Modern approaches to organization of reproduction of personnel of higher qualification in graduate schools of higher educational institutions. Bulletin of the Association of Universities of Tourism and Service]. № 4; Reznyk S. D. Ustynova D. V. (2012) *Prodvizheniju v aspiranturu odarennyh studentov nuzhna sistema. Prepodavatel' XXI veka* [Promotion of students need a system to graduate postgraduate studies. Teacher of the XXI Century]. № 4; Herbst M. Financing Public Universities: The Case of Performance Funding Dordrecht: Springer, 2007; Dougherty K. J. Natow R. S. The Politics of Performance Funding for Higher Education. Origins, Discontinuations and Transformations. Baltimore: John Hopkins University Press, 2015; Park C. Redefining the Doctorate. York: The Higher Education Academy, 2007; Louw J. Muller J. A Literature Review on Models of the PhD. Wynberg: CHET, 2014; Educating Scholars: Doctoral Education in the Humanities / R. G. Ehrenberg, H. Zuckerman, J. A. Groen, S. M. Brucker. Princeton: Princeton University Press, 2009; Sowell R. The CGS PhD. Completion Project: A Study of Doctoral Completion at Selected Universities in the US and Canada 2010. URL:

school not only in higher educational establishments, but also in research institutes, in particular, research institutes forensic examinations of the Ministry of Justice of Ukraine, were not considered.

Hon. Prof. M. S. Bokarius Kharkiv Research Institute of Forensic Examinations (further referred to as the Institute) is a state specialized scientific institution that belongs to the Ministry of Justice of Ukraine, and, in accordance with Ukrainian legislation, carries out scientific, judicial, expert, scientific, technical, scientific, organizational and educational activities in the field of judicial examination, criminalistics and law. The Institute is one of the oldest state forensic institutions of Ukraine with sufficient experience in personnel training. One of the main indicators of the Institute's work is the preparation and defense of dissertations by its staff. Throughout its existence, the Institute was concerned with the training of highly skilled scientific personnel, because it is a guarantee of obtaining qualitative, thorough conclusions of the examinations.

However, the training of scientific personnel of higher qualification directly in the graduate school of the Institute was carried out only at the beginning of the functioning of judicial and expert institutions. So, on September 18, 1925, the RNK of the Ukrainian SSR adopted a resolution "On postgraduates at the offices of the forensic examination", which determined the procedure for training specialists for forensic examination for the needs of these offices from persons who had professional higher education. According to this resolution, postgraduates with a term of education of three years were introduced at the Kharkiv, Kyiv and Odesa offices of scientific and judicial expertise. This resolution states: "In order to supplement the staff of the regional offices of the scientific and judicial expertise by the scientific workers, by special training of persons who have acquired higher education, the Council of People's Commissars of the Ukrainian SSR decided:

1. To establish posts of postgraduate students at Kharkiv, Kyiv and Odessa regional offices of scientific and judicial examination, for three persons from each.

2. Ph.D. students are admitted to the competition by directors of the cabinets from the number of persons who have completed professional higher education, and their National Commissioner of Justice confirms. The rules of the competition are established by the People's Commissariat of Justice, agreeing this case with the People's Commissariat of Education.

3. The rector of postgraduate studies is established three years.

4. Postgraduates receive remuneration for their work in the offices in the

https://www.ncsu.edu/grad/about-grad/docs/cgs-phd-completion-project.pdf (access date: 04.06.2018); Bolshova N. N. (2010) The Postgraduate: Issues of Western Universities. Available from URL: http://old.mgimo.ru/news/university/document160572.

amount of the rate set for the technicians working at the offices.

5. The rules of passing the postgraduate study are established by the People's Commissariat of Justice, having agreed with the People's Commissariat of Education.

6. Postgraduate students, having passed postgraduate studies, if the relevant authorities recognized it as satisfying, receive the qualification of a scientist forensic laboratory assistant established in this general manner.

7. After graduation, the person who passed it, must serve in the offices of scientific and judicial expertise in their specialty for at least three years"[1].

In the normative documents of the period 1920–30-ies, provisions for conducting research in Ukrainian forensic institutions, the introduction of posts of scientists-laboratory assistants, post-graduate students, academic secretaries, research staff, planning of research work of institutes, etc. were fixed.

During the Second World War, the post-graduate school ceased to exist, and so far, this issue has not been violated in the system of forensic institutions of the Ministry of Justice of Ukraine.

The lack of a post-graduate course, especially recently, complicates the work of training specialists of higher qualification, which leads to the containment of the development of scientific forensic expertise in Ukraine. That is why the employees of Kharkiv RIFE and other specialized institutions of the Ministry of Justice of Ukraine were forced to acquire academic degrees in the field of forensic examination and other branches of knowledge in specialized scientific councils of higher educational institutions of Ukraine and the near abroad. Despite the general positive trend of such training of scientific personnel of higher qualification, there is a negative impact on the activity of state specialized institutions and the work of employees of these institutions: periodic absence of employees during the period of study leave and communication on the topic of dissertation work with the head (forecasting areas of research, discussion of sections of the dissertation, etc.), registration and submission of necessary documents relating directly to the postgraduate study, etc., entails a suspension which is undesirable because of the number of designated and conducted forensic examinations and expert studies increasing annually. In addition, the teaching staff of the postgraduate study at higher educational institutions is mostly not focused on the training of professional

[1] *Stolitnii shliakh sudovoi ekspertyzy v Ukraini (1918–2018 rr.)* [Hundred Years of Forensic Examination in Ukraine (1918–2018)] / auth.-comp. O. M. Kliuiev, O. P. Uhrovetskyi, E. B. Simakova-Yefremian and others. edited by O. M. Kliuiev. Kharkiv : Golden pages, p. 110–112 [in Ukrainian].

court experts, and therefore the views of teachers on certain problems of expert support of justice are far from the realities of forensic expert activity.

In order to solve problems related to the training of high-skilled scientific personnel, it is necessary to implement certain measures:

— to receive a license for educational activity in the field of training for higher education graduates of the degree of doctor of philosophy in specialty 081 "Law" (12.00.07 — administrative law and process, financial law, information law, 12.00.09 — criminal procedure and criminalistics, judicial expertise, operationally Investigation activities), which includes the following areas of researches: administrative legal regulation of forensic expert activity in Ukraine; theoretical foundations of the formation of the legal doctrine of forensic expert activity in Ukraine; the genesis of the formation of forensic expertology and the regularity of its paradigm shift; theory and methodology of forensic examination (trends and prospects of development); theoretical and legal principles of the formation of the expert system of justice; legal regulation of staffing of forensic expert institutions; problems of expert providing of criminal proceedings; theoretical and applied problems of the formation of expert technologies in forensic expert activity, etc.;

— organizing the postgraduate course to ensure the needs of the research institutes of forensic examinations of the Ministry of Justice of Ukraine and specialized expert institutions of other ministries and departments in the training of applicants for higher education in the degree of doctor of philosophy in the field of law in the areas of expert justice;

— to create an appropriate specialized academic council in the Kharkiv Scientific Research Institute and other events.

So, on June 13, 2018, the Institute received a license for educational activities in the field of training graduate students in the degree of doctor of philosophy in the specialty 081 "Law", licensed volume — 25 persons.

On the basis of the obtained license in the KhRIFE, all necessary steps have been taken to establish a postgraduate study, namely: the head of the institution has been developed and approved by the Regulations of the postgraduate study at the KhRIFE, the Regulations on the admission committee in the KhRIFE; The program of the entrance exam for postgraduate study in specialty 081 "Law"; recommended topics for abstracts for applicants for postgraduate studies; programs of candidate examinations in specialties; Rules for admission to the postgraduate study program; Regulation on the appeal commission of the postgraduate study of KhRIFE; information on educational and methodological provision of educational activity in the field of higher education on specialty 081 "Law" ; Information about the information provision of educational activities in the field of higher education on specialty 081 "Law"; work syllabus of educational disciplines, etc.

Now, all the conditions for qualitative training of specialists of higher

qualification are created in the KhRIFE: there are 270 employees at the Institute, including 9 Doctors of Sciences, 29 Candidates of Sciences, 8 Professors, Associate Professors and Senior Researchers; There is a scientific library, the volume of foundations of literature is more than 4,5 thousand copies. Since 2001, the Institute has published a collection of scientific works "Theory and Practice of Forensic Examination and Criminalistics", which in 2005 was included in the list of scientific professional editions of Ukraine, where the results of dissertation papers for obtaining the degrees of a doctor and a candidate of sciences (the resolution of the Presidium of the VAK Ukraine from 08.06.2005 № 2–05 / 5, dated March 30, 2011 № 1-05 / 3, Order of the Ministry of Education and Science of Ukraine dated July 11, 2016, № 820); equipped computer class, lecture hall, meeting room with multimedia equipment, etc.

This indicates the need for serious organizational and methodological changes in the preparation of expert staff. The main condition for such training is the formation of a new round in the field of forensic expert activity, which includes regulatory legal regulation, organizational and structural elements of education, methodological and technological standards of training, standards and technology for the initial control of theoretical knowledge and practical skills of forensic experts.

It is these specialists who will be able not only to conduct expert research at a high scientific level, but also to develop appropriate innovative scientific and methodological materials to improve the activities of specialized forensic institutions. The use of this approach in the preparation of expert staff is consistent with the global requirements for the quality of modern education. The new conditions give impetus to the development of specialists who are capable of effectively realizing, confidently orienting and making informed decisions in the conditions of fast-moving socio-economic processes.

Only if the planned implementation of the planned stages and components of the development of the forensic expert system can be expected on the decent staffing of the state judicial-expert institutions, their professional competence, self-improvement, creative development, which will be the key to the high quality of expert research, new modern expert methods, expert activity in Ukraine.

ШЛЯХИ ПІДВИЩЕННЯ ЯКОСТІ ПІДГОТОВКИ КАДРІВ ДЛЯ СУДОВО-ЕКСПЕРТНИХ УСТАНОВ МІНІСТЕРСТВА ЮСТИЦІЇ УКРАЇНИ

С. Г. Гаспарян

Розглянуто питання необхідності реформування й удосконалення якості підготовки та підвищення кваліфікації кадрів для судово-експертних установ Міністерства юстиції України. Викладено історичні аспекти щодо створення аспірантури в кабінетах науково-судової експертизи в Україні. Наведено шляхи

вирішення проблем, пов'язаних з підготовкою наукових кадрів вищої кваліфікації.

Ключові слова: підготовка кадрів, система якості, судова експертиза, судово-експертні установи, судовий експерт.

ПУТИ ПОВЫШЕНИЯ КАЧЕСТВА ПОДГОТОВКИ КАДРОВ ДЛЯ СУДЕБНО-ЭКСПЕРТНЫХ УЧРЕЖДЕНИЙ МИНИСТЕРСТВА ЮСТИЦИИ УКРАИНЫ

С. Г. Гаспарян

В настоящее время вопрос по подготовке научных кадров высшей квалификации является одним из приоритетных при решении задач реформирования судебной экспертизы, направленных на ее дальнейшее развитие и повышение качества экспертных исследований. Харьковский научно-исследовательский институт судебных экспертиз им. Засл. проф. М. С. Бокариуса является одним из старейших государственных судебно-экспертных учреждений Украины, имеющий достаточный опыт по подготовке кадров. Однако, подготовка научных кадров высшей квалификации непосредственно в аспирантуре Института осуществлялась только в начале функционирования судебно-экспертных учреждений. Так, 18 сентября 1925 г. СНК УССР принял постановление «Об аспирантах при кабинетах научно-судебной экспертизы», которое определяло порядок подготовки специалистов по судебной экспертизе для нужд этих кабинетов из лиц, имеющих профессиональное высшее образование. Согласно этому постановлению при Харьковском, Киевском и Одесском кабинетах научно-судебной экспертизы были введены должности аспирантов со сроком обучения три года. Во время Второй мировой войны аспирантура прекратила свое существование. Отсутствие собственной аспирантуры усложняет работу по подготовке специалистов высшей квалификации, что приводит к сдерживанию развития научного и судебно-экспертного потенциала в Украине. С целью решения проблем, связанных с подготовкой научных кадров высшей квалификации, руководством Харьковского НИИСЭ проводятся соответствующие мероприятия. Так, 13 июня 2018 г. Институт получил лицензию на осуществление образовательной деятельности в сфере высшего образования по третьему образовательно-научному уровню (подготовка докторов философии) по специальности 081 «Право». На основании полученной лицензии в Институте выполнены все необходимые мероприятия по созданию аспирантуры. Достойное кадровое обеспечение государственных судебно-экспертных учреждений станет залогом высокого качества экспертных исследований, новых современных экспертных методик, развития судебно-экспертной деятельности в Украине.

Ключевые слова: подготовка кадров, система качества, судебная экспертиза, судебно-экспертные учреждения, судебный эксперт.

FORENSIC LINGUISTIC AND HANDWRITING EXAMINATION: METHODOLOGICAL APPROACHES TO SOLVING TASKS

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FORENSIC PRACTICE FOR LINGUISTIC EXAMINATION OF HANDWRITING

Possibilities of solving linguistic (authoring and semantic-textual) problems are considered. Examples of expert practice show the approaches to linguistic research and the form of giving conclusions. The present state of development of linguistic examination of written speech is described and new directions of research are indicated. The objects, the research of which are caused by the needs of forensic practice and which today are not sufficiently studied from the point of view of expert research, are indicated.

Keywords: linguistic examination, author's and semantic-textual tasks, expert practice, forensic examination, written speech, author of the document.

In forensic expert practice, from time to time, there are discussion issues related to the lack of development of scientific principles of a particular type of expertise, research of certain objects, that is, the problems caused by the needs of forensic practice. Thus, in the literature it has been repeatedly noted that authoring and linguistic examinations are two different kinds of examinations, since the scientific basis for author's examination is judicial authorship — the subject area of forensic and expert knowledge[1] (in particular, identification court autoregressive examination is based on the theory of forensic identification). Moreover, if we consider judicial authorship as an applied branch of linguistics, then it follows that the same applies to judicial handwriting: one of the main phenomena that make up the

[1] *Kriinalisticheskoe pocherkovedenie i avtorovedenie. Kriminalistika* (1997) [Forensic handwriting and authorship examination. Criminalistics]. Moscow, Chapter 15, § 7, p. 278–284 [in Russian].

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essence of written speech, is its graphic side, associated with the physical realization of speech utterances. The scientific base of linguistic expertise is the applied branch of linguistic science that is currently being formed judicial linguistics. The subject of linguistic expertise is the task-solving, which, although it involves the research of written-speech objects, but does not have an author's orientation. These include the semantic, semantic, as well as the tasks associated with the study of names (analysis of names, trademarks, labels in order to establish their novelty, originality, compliance with language rules, etc.). Today, author's examination is part of linguistic expertise, as well as semantic and textual. However, the question arises about the assignment of semantic and textual expertise to forensic types of expertise based on criminalistics data, whose task is to identify the traces of reflection or the division of parts of the whole and the establishment of the nature or state of the objects that are formed by traces, and the mechanism and conditions their trace formation. So, first and foremost, semantic and textual examination is based on the methods of linguistic, social, psychological sciences, and not on the methods of criminology. The main tasks of the semantic and textual examination are the establishment of the content of the concepts, the lexical meaning of words or phrases, their stylistic color, semantic loading, the nature of information, that is, the resolution of issues of speech, not related to the establishment of actual data about the author, which is specific to the tasks of authoritative examination.

However, today in the list of types of expert assessments conducted by the judicial-expert institutions of the Ministry of Justice of Ukraine, a linguistic expert examination of the criminological types of expertise is indicated in accordance with clause 1.2 of the Instructions on the appointment and conducting of forensic examinations, and includes the following types of expert specialties: 1.2 *Linguistic Expertise of Written Speech*, and 1.3 *Linguistic Expertise of Oral Translation*, according to the Order № 301/5 dated 03.03.2015. This issue needs to be resolved, as Annex 6 to the ECC Regulation and the certification of forensic experts approved by the same order, specialties 1.3 and 7.3 have the same name. Of the expertise of video recording, specialty 7.3, which was previously not excluded, as experts believe that this specialty should be, because during the examination, they use not only the instrumental methods of studying speech, but also linguistic. And while creating a specialty 1.3, they meant that experts who would be entitled to sign a newly created specialty would solve only part of the tasks, namely semantic-textual. The result of this is that nowadays there are no certified specialists in the specialty 1.3 of experts put into the State Register of Certified Judicial Experts, the administrator of which is the Ministry of Justice of Ukraine. And forensic linguistic examinations, namely semantic-textual, are, if necessary, carried out within the framework of a comprehensive study of video, audio and linguistic research of written speech.

According to expert practice, these integrated studies are conducted in criminal cases on the establishment of appeals, threats, proposals for the award of remuneration, etc. In civil cases, more often appointed examinations concerning the protection of the honor, dignity and business reputation of a particular person. According to the statements of individuals and legal entities, as a rule, expert studies are conducted regarding the interpretation of the content of fragments of the text, their identities, as well as the establishment of negative information, the form of its presentation and whether it is offensive to a particular person.

The methodological principles of linguistic (semantic and textual) written translation expertise are not sufficiently developed. To date, the Register of Methods for conducting forensic examinations is proposed to include a methodology for setting offensive statements, which was developed by the Kharkiv and Kyiv Research Institute of Human Rights of Ukraine. A team of Kharkiv NDICE has completed the methodology for making statements that contain appeals, which has yet to be tested and implemented in expert practice. Currently, the staff of the Kyiv Research Institute for Science and Technology are developing scientific and methodological recommendations for the establishment of propaganda information. The Kharkiv Scientific Research Institute is offered to develop a methodology for establishing a "threat", speech act. Consequently, work in the direction of the development of linguistic (semantic and textual) examination is actively conducted, based on the needs of a criminal case.

Regarding the linguistic (authoring) examination of written speech, it can be noted that although the methodology of identification and classification-diagnostic autoregressive expertise has been developed, however, today there are a number of unresolved issues, for example, from the study of texts of official-business documents that contain extremely small informative material due to specifics texts (for example, rulings, claims, petitions etc.), short texts of sms-messages, post items etc. The complexity of the research of these texts arises because of their implementation with the help of computer technology, and therefore their broadcasting features, forms of information provision (Internet discourse genre and its written fixation features), etc. Therefore, it is not always easy for an expert to establish, for example, whether a single person is composed of several texts or to determine socio-biographical portrait of the author.

Examples of expert practice can be considered as ways to solve some expert authoring tasks. Thus, for the research the expert received the text of the message, which was sent to the e-mail to the head of the organization, which indicated requirements for the termination of activities and possible consequences of non-fulfillment. The decision of the expert raised the question of providing a socio-biographical portrait of the author of this text. During the study, it was found that in the text under study, the use of such

tokens, which indicate the fact of free use in the texts of lexical-syntactic structures, inherent in Russian speech in the conditions of daily communication. This made it possible to suggest that the Russian language is the main spoken and presumably native to the author (s) of the letter. Along with the sufficiently clear structural design of the text, the sequence of presentation, content completeness, sufficient vocabulary, established punctuation violations, which was reflected in the absence of punctuation marks due to content; in the use of a small letter at the beginning of sentences, the presence of spelling mistakes. The expert noted that violations may be caused both by the features of the Internet discourse and its writing fixation, and by the fact that the author and performer are different people. Nevertheless, it was concluded that the speech structures on the content, lexical levels, despite the established punctuations and spelling mistakes, due to these factors, indicate that the author's (s) text culture level is characteristic for people with a higher education than the average. Also, the expert noted that for the author of the letter of the letter is characterized by the use of literary-processed speech, the free use of lexical-syntactic speech means, ability to clearly articulate and logically build sentence, indicating A sufficiently experienced experience of written communication and provides grounds for the assumption that the author (s) of the text is likely to be a person (person) aged 20 years (KhRIFE archive).

The second thing is. The expert institution received an order appointing an expert examination, in which the decision of the expert raised the issue of establishing a socio-biographical portrait of the author of the handwritten text of the letter, which was sent to the judge who was handling the person who committed the crime and is in custody. In the course of the research, the expert found that the handwritten text of the letter was composed using elements of two languages (Russian and Ukrainian) without observance of norms of the literary language that is Surzhyk. The leading language in which the text is written is probably Ukrainian. It was also found that the use of certain speech structures is characteristic of the vocabulary of individuals of different age groups, indicated in the inconsistency in the presentation of thoughts, which turned out that the text is provided on behalf of the first person singular, then on behalf of the first person of the plural. Attention is drawn to the existence of corrections, notes, along with the writing of words with superfluous letters, and it is noted that the above may serve as an explanation that perhaps the text was in the process of discussing the events that were laid out. Consequently, on the basis of the research conducted by the expert, a conclusion was drawn in a probable form that the text was composed by several individuals, and that certain language structures of the text were predominantly used by women, one of which could be a woman aged 35–55 years (archive of KhRIFE).

Also, the expert institution received an order of the investigator, in which the documents under study were a greeting card and a short-term letter, which

stated that it would be done by the author in relation to the addressee and his relatives of women, and also the reason for his actions. The decision of the expert raised the question of establishing a socio-biographical portrait of the author, determining the fact of writing texts under dictation or by rewriting and compiling texts with the intentional distortion of the features of his written speech. In the process of comparing texts between themselves, the expert suggested that they were composed by one person, and pointing to the short volume and small informative nature of the linguistic material, noted that only in the probable form one can conclude that the author of the texts is one person. There was also a high level of development of the language skills of the Ukrainian written translation of the author, the free use of lexico-syntactical structures characteristic of Ukrainian written speech in the conditions of everyday communication, along with the observed use of the Russian-speaking design. The expert noted that this error belongs to widely spread Ukrainian-Russian broadcasters of Ukrainian-Russian bilingualism, which may indicate that the author of the text is a bearer of bilingualism. However, the high level of development of the language skills of the Ukrainian written language, the free use of its lexical-syntactical structures (despite the single use in the text of the Russian-language design), along with the short volume of the text, the small informative nature of the investigated material, allow only in a probable form to conclude that, that the native language of the author (authors) of texts is still Ukrainian. It was further noted that along with clear structural design, sequencing, free use of speech structures of the Ukrainian written language, compliance with spelling rules, violations at spelling and punctuation levels were established, as well as existing copyright separations. Based on this, the expert suggested that this may be due to the author's intention to change the written broadcast due to the decrease in the level of development of these skills, and concluded that the level of the author's text culture is characteristic for people with higher education. Concerning the establishment of gender and age of the author of the expert, it is noted that the written language of women is characterized by the presence of affectionate vocabulary, the use of words with diminutive passionate suffixes, the description of their own feelings, experiences, which is observed in the text. But along with this it is indicated that for the texts there is a sequence of statement, the disclosure of the topic without introduction, which is characteristic of the texts executed by men, and the use of vocabulary, which does not always conform to the rules of polite, cultural communication, taking into account the lexical-semantic analysis of this text, can be considered, as an affectionate vocabulary when describing their own feelings, which is typical of the texts of women. Consequently, the predominant use of language structures characteristic of women's speeches, as well as the limited volume of these texts, their informative nature, allowed

the expert only in a probable form to conclude that the author (s) of these texts is a woman. Focusing on the free use lexical and syntactic means Ukrainian language and structures typical of Ukrainian writing in terms of everyday communication, ability to clear content plan to build sentences, the expert notes that the availability of sufficient prevailing practices written communication provides grounds for the assumption that the author of the text is likely to be a person aged 25 to 55 years. Further, the expert, taking into account the aforementioned, notes that violations in the lexical-syntactic, spelling, punctuation level, which would indicate the fact of the execution of texts in dictation or by rewriting, are not specified in these texts. Pointing out the violations at the spelling and punctuation levels (along with the correct use of spelling and punctuation "at the level of correctness of speech"), the expert points out that the stated intention of the author intentionally change the writing of speech due to the decrease in the level of development of these skills. But the short volume of texts, the small informative nature of the material under study, allowed only in a probable form to conclude that the texts studied compiled with a deliberate distortion by the author of the signs of his written speech (archive of KhRIFE).

Most of the probability of conclusions based on the examples given is due to the fact that the related sciences contain contradictory data on the typological characteristics of a person, in particular age, sexual, etc. Also, the peculiarities of speech behavior of Ukrainian-speaking citizens are not sufficiently studied. In addition, as the expert practice shows, the study should also take into account the features of the central nervous system of persons whose written speech is subject to expert examination.

Information about the characteristics of the author of the document, established by the expert, despite most of the probable nature of the findings, is very important for the correct introduction of investigative versions, their verification, the drawing up of an investigation plan and the resolution of other tactical tasks. Analyzing the results of the survey of investigators, 84 % of investigators gave a positive answer to the question whether the investigation of the conclusions of the author's examination, which provided the socio-biographical portrait of the author of the document, was helpful in investigating.

There are many questions that arise in expert practice. For example, solving tasks related to the writing of texts of legal documents (decisions, court decisions, statements of claim) by one or different persons, research texts of sms-messages, Internet rewriting, etc. After all, the study of such texts has a number of features, which today in expert practice is not sufficiently studied. Therefore, the development of new methods for authoring and semantic-textual research, which are conditioned by modern requirements of forensic investigation practice, is becoming relevant.

СУДОВО-ЕКСПЕРТНА ПРАКТИКА ПРОВЕДЕННЯ ЛІНГВІСТИЧНОЇ ЕКСПЕРТИЗИ ПИСЕМНОГО МОВЛЕННЯ

Л. В. Свиридова

Розглянуто можливості вирішення лінгвістичних (авторознавчих і семантико-текстуальних) завдань. На прикладах з експертної практики показано підходи в лінгвістичному дослідженні та форми надання висновків. Описано існуючий стан розвитку лінгвістичної експертизи писемного мовлення й зазначено нові напрями дослідження. Зазначено об'єкти, дослідження яких викликано потребами судово-слідчої практики і які на сьогодні недостатньо вивчені з точки зору експертного дослідження.

Ключові слова: лінгвістична експертиза, авторознавчі та семантико текстуальні завдання, експертна практика, судова експертиза, писемне мовлення, автор документа.

СУДЕБНО-ЭКСПЕРТНАЯ ПРАКТИКА ПРОВЕДЕНИЯ ЛИНГВИСТИЧЕСКОЙ ЭКСПЕРТИЗЫ ПИСЬМЕННОЙ РЕЧИ

Л. В. Свиридова

Обсуждены возможности решения лингвистических (авторoведческих и семантико-текстуальных) задач. Указано на пробелы в нормативно-правовых актах, которые регулируют судебно-экспертную деятельность, и отмечена необходимость урегулирования этих противоречий. На примерах из экспертной практики показаны подходы к лингвистическому (авторoведческому) исследованию и формы выводов экспертов, формулировка которых дана с учетом состояния развития лингвистической экспертизы. Отмечено, что вероятная форма выводов связана с недостаточной разработкой и различными подходами в исследовании проблем пола, возраста и т. д., которые исследуются в смежных науках. Описано состояние развития лингвистической экспертизы письменной речи на современном этапе и обозначены новые направления исследований. Перечислены разработанные методики, которые могут использоваться в экспертной практике, и указаны перспективные направления в области лингвистических исследований. Приведены объекты, исследование которых вызвано потребностями судебно-следственной практики, и на сегодня недостаточно изучены. К ним относятся СМС-сообщения, интернет-переписка, письма по электронной почте и т. д. Отмечено сложности исследований этих объектов и указано на то, что данные смежных наук содержат недостаточно изученный материал относительно коммуникативного исследования этих объектов. Однако потребности как экспертной, так и судебно-следственной практики диктуют необходимость разработки методик исследования новых объектов и усовершенствования старых методик с учетом стремительного роста преступности, принимая во внимание развитие интернет-преступности.

Ключевые слова: лингвистическая экспертиза, авторoведческие и семантико-текстуальные задачи, экспертная практика, судебная экспертиза, письменная речь, автор документа.

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FEATURES OF FORENSIC MULTIPLE HANDWRITING EXAMINATION

Peculiarities of the multifaceted forensic-written examination and the peculiarities of its separate stage — the preliminary research is considered. The given sequence of stages of the research can be one of the types of guarantee of complete and comprehensive objective research of a significant number of objects, serve as the basis for making the correct expert decision.

Keywords: multi-objective examination, algorithm of problem solving, stage of research.

Like other areas of knowledge, judicial handwriting is in constant development. Although his main postulates were made by scientists in the second half of the twentieth century, this process can in no way be called completed as a research on the resolution of identification tasks. Scientific developments at the present stage continue to study the patterns of the process of solving expert tasks, improve the methods of handwriting expertise, help to optimize the work of a handwriting expert[1].

Analysis of expert practice proves that multispectral expertise has always been a significant part of forensic examination by the court or pre-trial investigation bodies. This proves that the need to study a large number of hand-drawn objects arises from time to time in the investigation of criminal proceedings, economic affairs related to the economic activity of enterprises and individuals, when considering some civil cases in property disputes, etc. The urgency of conducting such expert examinations does not decrease with time. In many cases, the expert's conclusion is the main reason for the decision in the case.

The specificity of the study of many objects makes it possible to recognize the named examination as a separate type[2]. Since the forensic examination is generally one of the most labor-intensive and requiring expert

[1] Melenevskaya Z. S. (2015) *Sudove pocherkoznavstvo: problemy i perspektyvy rozvytku. Kryminalistychnyi visnyk* [Forensic handwriting: problems and prospects of development. Kryminalistychnyi visnyk]. № 1. P. 113–120 [in Ukrainian].

[2] Kolotnova A. I. (1972) *Osobennosti provedenija mnogoob"ektnyh pocherkovedcheskih jekspertiz: bibliotechka jeksperta* [Features of multi-objective handwriting expertise: Expert library]. Moscow : VNII MVD SSSR, 22 p. [in Russian].

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use of a significant amount of time, scientists from the second half of the twentieth century. and until now have tried to simplify and structure the process of research and drawing conclusions[1].

In the judicial handwriting multi-objective traditionally considered an examination consisting of 10–20 or more objects of study (controversial handwriting objects and samples of handwriting (signatures) of persons being inspected[2].

It should be noted that the method of handwriting research during multi-faceted expertise is based on the general provisions of traditional methods of studying handwriting and signature, depending on the objects under study. This is due to the individual character of the latter within the framework of a general type of examination, both handwriting and signature. When preserving the provisions of individual methods, solving specific problems requires different approaches depending on the nature of the research objects. The specific content of this technique is due to the number of research objects and/or comparative materials.

Objects of this type of handwriting examination can act as handwritten texts (large, medium, small volume), and short records (alphanumeric, digital), signatures (letters, dashes, mixed), as well as samples of handwritten (signatures) of persons, which are subject to verification.

Quantitative increase of research objects at once leads to qualitative changes in the structure of the solution of the main task, therefore the method of identification research of the multiple handwriting object is multidirectional — often there is a need for solving a certain intermediate task. In this case, the results obtained are used as the source data for solving the main task. Such task, for example, can be the solution of the issue of the execution of disputed handwriting objects by one person. This fact is used later in the study — work with the objects under study as a single handwriting array. With a positive result, the expert gets a qualitatively new handwriting object, which contains more complete information about the written and motor skills of the artist. The implementation of the intermediate stage allows a total assessment of the identified features of individual objects, which greatly facilitates identification and determines its reliability. From the received interim result the planning of the further research, the choice of the expert of the corresponding separate methods, building of expert versions depends[3]. In some cases, depending on the results obtained at the stage of the

[1] Semyna L. S. Zlobyna T. H. (1977) *Sostavlenie zakljuchenij po mnogoob"ektnym pocherkovedcheskim jekspertizam : metod. rekom.* [Compilation of conclusions on multidimensional handwriting examinations : methodical recommendations]. Moscow : VNIISE, 32 p. [in Russian].

[2] Chekulaieva A. S. (2016) *Okremi metodychni pytannia doslidzhennia bahatoobʻiektnoi pocherkoznavchoi ekspertyzy. Teoriia i praktyka sudovoi ekspertyzy* [Separate methodological issues of the research of multifunctional handwriting expertise. Theory and practice of Forensic Science]. Kyiv, p. 337–339 [in Ukrainian].

[3] Atakhodzhaev S. A. Papers mentioned above, p. 4.

previous study, there is a need to resolve the diagnostic tasks, conduct diagnostic research.

A characteristic feature of the study of many hand-drawn objects is the stage of their grouping. The multiple nature of the examination determines the use of groups of research objects, sometimes extremely heterogeneous in composition, in respect of which it is necessary to organize and consolidate on different grounds. It may relate to the teaching process and research results, the research objects themselves, and so on.

Grouping in a multi-objective examination is actually a solution to the classification intermediate task, diagnostic and identification analysis, the result of which is the establishment of group membership of objects[1]. Some scholars of modern handwriting, structuring the preliminary stage of the study of the methodology of multi-faceted hand-written examination, suggest including a separate and comparative study.[2]

Taking into account the above, it should be noted that the methodology of multi-faceted handwriting expertise at the stage of the previous study has features that distinguish it from other handwriting techniques. According to the authors, the attention of experts and the careful implementation of all stages of the analysis serves as a prerequisite for a comprehensive study and a correct conclusion on the questions posed.

The conditional stage of the preliminary study can be called the familiarization with the provided materials. The mentioned stage includes, first of all, the study of the procedural document on the appointment of a judicial documentary examination (ruling / decree), which gives the expert the opportunity to find out: which objects are subject to research, questions put to the decision of experts, the number of persons who are checked and in relation which questions are raised, information regarding the conditions for the research objects and samples.

In examining the questions raised, the expert also finds out whether they are within the competence of an handwriting expert, whether they are in accordance with existing methods of handwriting research, methodological recommendations, listed in the list of Scientific and methodological recommendations on the appointment and conduct of forensic examinations and expert studies approved by the order 10/08/1998 № 53/5 of the Ministry of Justice of Ukraine (with amendments and supplements).

It is the study of the document on the appointment of handwriting expertise provides the expert with the first general idea of the structure of the problem to be resolved. At this stage, the issue of availability and compliance

[1] Ibidem, p. 7–8.

[2] Solomakha Yu. V. Nikolaichuk T. V. (2014) *Deiaki pytannia metodyky doslidzhennia bahatoobʹiektnoi sudovo-pocherkorznavchoi ekspertyzy. Krymynalystyka y sudebnaia ekspertyza* [Some questions of the methodology of investigation of multi-objective forensic examination. Forensic science and criminalistics]. № 59. P. 212–217 [in Ukrainian].

of the objects provided (including requisites) specified in the resolution / decree on the appointment of an examination is first and foremost addressed. Paying attention to the large number of documents submitted, the person who assigns a forensic examination can make mistakes in determining the objects, not their specifying. When getting acquainted with the objects provided, the expert draws attention to the general features, for example, the material of documents (paper, board, stone, etc.), pre-reveals the presence of signs of unusual performance of the studied handwriting objects.

Detection of signs of unusual execution for their explanation requires some information, including official ones, provided by the person who appoints an examination. Also in the document it is expedient to mention certain features concerning the probable person performing the objects under study (age, state of health for the period of performance of the investigated objects, other defects that may have an effect on the written and motor skills of the performer, for example, possession an unusual left hand, etc.). This information affects further verification of the comparability of the samples provided and the establishment of the adequacy of the comparative material.

Examination of given samples goes in three directions:

1) the availability of free, conditional-free and experimental samples;

2) the authenticity of the samples provided;

3) their sufficiency in terms of quality (compliance with the nature of the material, time and conditions of execution) and quantity.

At this stage, the expert decides on the need to submit a petition, in accordance with the current procedural legislation of Ukraine, on the provision of additional materials necessary for conducting forensic examination.

The above stage ends with the formulation of general and separate versions of the essentially set issues. The general versions serve to group the objects under investigation, in which case this happens as the nature of the general version (for example, identical, non-identical handwriting, true, false signatures, etc.), and the degree of its probability. A similar grouping is essential for the formation of a plan for further research. Since this plan entirely depends on the proposed expert versions, then in the future it can be adjusted, supplemented to a certain version by solving additional writing tasks (for example, diagnostic).

The degree of probability of general and separate versions and counter versions depends on the number and informativeness of the objects being studied, the variation of the features in these objects and samples. Significantly greater probability of the versions put forward by the expert in relation to informative objects, with low variation of their samples and

samples. In other cases, versions and counter versions have the same meaning for the research[1].

It should be added that in recent times, the amount of expert practice requires experts not only to update methodological approaches in solving handwritten tasks with a large number of objects, but also to improve the methods of conducting relevant research. One of such methods that contribute to the reduction of the volume of the conclusion of the multi-faceted handwritten examination is the possibility of drawing up corresponding tables (developments, identified features, both general and individual).

So, summing up the above, it can be noted that, despite the fact that the general provisions of the methodology of forensic examination are extended to multi-objective studies, the process of their conduct has its own characteristics, ignoring which can lead to an expert mistake[2].

In our opinion, the consideration of the issue of the peculiarities of the stage of the preliminary study during the multivariate handwriting expertise is important for post-graduate students, as well as with the great experience of work.

ОСОБЛИВОСТІ ПРОВЕДЕННЯ БАГАТООБ'ЄКТНИХ СУДОВО-ПОЧЕРКОЗНАВЧИХ ЕКСПЕРТИЗ

С. Ф. Брюхань, Н. В. Сиротенко

Розглянуто специфіку багатооб'єктної судово-почеркознавчої експертизи та особливості її окремої стадії — попереднього дослідження. Наведена послідовність етапів дослідження може бути одним із видів гарантії повного й усебічного об'єктивного проведення дослідження значної кількості об'єктів, слугувати підґрунтям для прийняття вірного експертного рішення.

Ключові слова: багатооб'єктна експертиза, алгоритм вирішення завдання, стадія дослідження.

ОСОБЕННОСТИ ПРОВЕДЕНИЯ МНОГООБЪЕКТНЫХ СУДЕБНО-ПОЧЕРКОВЕДЧЕСКИХ ЭКСПЕРТИЗ

С. Ф. Брюхань, Н. В. Сиротенко

Рассмотрена специфика многообъектной судебно-почерковедческой экспертизы. Подчеркнута актуальность их проведения и значение для принятия решений по делу. Обращено внимание на решение конкретных задач, которые требуют разных подходов, в зависимости от характера объектов исследования. Выделен многоступенчатый характер исследования множества почерковых объектов и рассмотрены особенности отдельной стадии — предварительного исследования. Раскрыта важность проведения этого этапа для дальнейшего планирования

[1] Atakhodzhaev S. A. Papers mentioned above, p. 42.

[2] Shvedova O. V. (2015) *Poniattia ta vydy bahatoob'iektnoi sudovo-pocherkoznavchoi ekspertyzy. Pravovi reformy v Ukraini: realii soho-dennia : tezy VII Vseukr. nauk.-teoret. konf., prysviach. Dniu yurysta Ukrainy* [Concepts and types of multi-faceted forensic examination. Legal reforms in Ukraine: realities of the present: Theses VII Allukr. Theoretical sciences. conf. devoted Day of the lawyer of Ukraine]. Kyiv, p. 227–229 [in Ukrainian].

исследования, выбора экспертом соответствующих отдельных методик, построения экспертных версий. Указано, что методика проведения многообъектных почерковедеских экспертиз уже на стадии предварительного исследования имеет особенности, которые отличают ее от других почерковедческих методик. Затронуты вопросы, касающиеся ознакомления с представленными материалами, проверки сопоставимости образцов и установления достаточности сравнительного материала. Отмечена важность решения вопроса о необходимости направления ходатайства экспертом, а также завершения этапа предварительного исследования формулированием общих и частных версий по сути поставленных эксперту задач. Экспертная практика в последнее время требует от экспертов не только обновления методических подходов к решению почерковедческих задач при предоставлении большого количества объектов, но и усовершенствования методов проведения соответствующих исследований. Приведенная последовательность этапов исследования может быть одним из видов гарантии полного и всестороннего объективного проведения исследования большого количества объектов, служить почвой для принятия правильного экспертного решения. Рассмотрение вопросов особенностей стадии предварительного исследования при проведении многообъектной почерковедческой экспертизы имеет важное значение для экспертов-почерковедов как начинающих, так и с большим опытом работы.

Ключевые слова: многообъектная экспертиза, алгоритм решения задачи, стадия исследования.

FORENSIC BALLISTIC EXAMINATION AND MILITARY OF WEAPONS

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CRIMINALISTIC RESEARCH ON AIRSOFT RIFLES MODIFIED FOR FIRING 5.56 × 45 MM CALIBER CARTRIDGES

Recently experts of the Israel Police ballistic laboratory encountered a new version of the atypical firearm. These are Airsoft rifles modified for firing 5.56 × 45 mm caliber cartridges. Main types of Airsoft rifles and methods used for their modification are described. Examples of such modifications, of forensic research methods and complexities that a forensic scientist can encounter during research are considered.

Keywords: atypical weapon, modified weapon, Airsoft, M-16.

Currently Airsoft rifles modified for live ammunition fire are delivered to the ballistic laboratory of Israel Police for research. Laboratory experts were not familiar with this manufacturing method manufacturing of homemade hand firearms. Therefore obtaining such samples they had no appropriate techniques for their research. Increase in the number of different modifications of atypical weapons of this type has revealed the need for systematization of knowledge obtained during the research.

The so-called Airsoft is a pneumatic weapon firing non-metallic spherical projectiles with a diameter of six millimeters[1]. This variety appeared in the 70s of the XX century in Japan where the law controls the issues of arms trafficking and possession of weapons very tightly. Military games called “Strikeball”, are held using Airsoft. Popularity of such games and such pneumatic weapons is constantly growing and now Airsoft clubs and Airsoft stores can be found practically in any country around the world including Ukraine and Israel.

[1] Airsoft. URL: https://en.wikipedia.org/wiki/Airsoft (access date: 06.04.2018); Airsoft gun. URL: https://en.wikipedia.org/wiki/Airsoft_gun (access date: 06.04.2018).

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Unlike the equipment used in paintball, the AirSoft guns is a dimensional and a mass-dimensional copy of real models in most cases. Moreover the muzzle energy of such handguns, rifles and assault rifles is very low and does not reach the value defined as the boundary condition of the weaponization criterion that means it does not reach the deadly force minimum value[1] of 0,05 kgm/mm^2 (in Israel a lower value is 0,032 kgm/mm^2). According to experience of Airsoft guns researching of Israel laboratory the measured value of specific kinetic energy did not exceed 0.008 kgm/mm^2) that means Airsoft is not a weapon and its circulation is not limited by law.

Whole variety of different designs Airsoft can be reduced to several main groups:

1. Spring powered gun: preparation of such samples for shooting is performed manually by moving back the breech block. At the same time it compress the spring which when you pull the trigger drives the piston creating air pressure in gun barrel. Such samples require recocking before each shot. Outwardly they can remind real samples but often external elements are not detailed and fixed.

2. Electric powered gun samples also called Airsoft Electric Gun or AEG. In such a designs the piston is driven by electric motor powered by a battery located inside the case. Samples constructed according to this scheme allow shooting both in semi-automatic and automatic modes. Outwardly they can be mass-dimensional copies of actual samples but during the shooting there is no movement of elements that are mobile when firing from a firearm. Internal elements have significant differences from the elements of firearms.

3. Samples using gas cylinders also called Gas Blowback or GBB. They do not use an internal piston and projectile is driven by compressed gas from a balloon usually in the form of a magazine. So-called Green Gas which main component is propane is used in most cases; cylinders with carbon dioxide (CO_2) are less used. Often such samples are mass-dimensional copies of actual models of weapons while shooting the breech block moves as well as in the samples of weapons served as a prototype. In many samples trigger is a copy of the real trigger.

As already mentioned above, over the last years new type of homemade weapon was encountered in the ballistic laboratory of the Israel police. These are modified versions of Airsoft rifles with a mechanism based on using gas cylinders and external characteristics of the M-16 and M-4 assault rifles.

Research on samples obtained for examination determined that following operations were performed for the modernization of Airsoft rifles:

[1] *Metodyka opredelenyia mynymalnoi uboinoi sylы standartnoho y atypychnoho ohnestrelnoho oruzhyia y boe-prypasov: posobye dlia ekspertov* (1979) [Procedure of determining minimum lethal force of standard and atypical firearms and ammunition : textbook for forensic scientists]. Moscow : VNIISE Institute, 58 p. [in Russian].

1. Replacement of the gun barrel with a rifled barrel of 5.56 × 45 mm caliber. For this purpose gun barrels are used from rifled weapon (M-16

2. Assault rifles and Galil assault rifles) or gun barrels acquired abroad including barrels acquired via the Internet such as those available on the Midway Arms[1] website (in certain cases US law does not limit the turnover of the weapon parts). Sometimes additional elements have been installed to connect the gas tube to the barrel gun (Figure 1). In other cases, the M-16 front sight is used for the connection as in the original weapon.



Fig. 1. The barrel of Galil machine gun with the element for connecting the gas tube. Used to modify an Airsoft rifle for firing cartridges 5.56 × 45 mm

2. Modification of the bolt carrier (Figures 2 and 3) for using the original breech block. In some Airsoft models overall dimensions allow using of original bolt carrier without any changes.



Fig. 2. Bolt carrier with a breech block (at the top: original from the M-16, at the bottom: modification from Airsoft with original breech block)

[1] Midway USA. Barrels. URL: https://www.midwayusa.com/barrels/br?cid=11624 (access date: 06.04.2018).



Fig. 3. Bolt carrier Airsoft modified for using with the original M-16 breech block and for live ammunition fire

3. Some Airsoft models size does not allow the use of the original parts of the M-16 assault rifle. In such cases, along with modification of a bolt carrier, a homemade firing pin with a length greater than the original one was made (Figure 4) or a change in shape of hammer was performed to ensure impact on the rear of the firing pin (Figure 5).

All the samples were tested using cartridges for 5.56 × 45 mm caliber with M193 bullet for live ammunition fire. Shooting was carried out using a device (a machine) holding the weapon and operated remotely. All studied samples shot without delay. After the shooting no deformation or destruction of the hull and internal elements was detected. For first samples received for examination, bullet velocity and the rate of fire measurements were made. They corresponded to standard valuesfor the M-16 assault rifle with the corresponding barrel length.

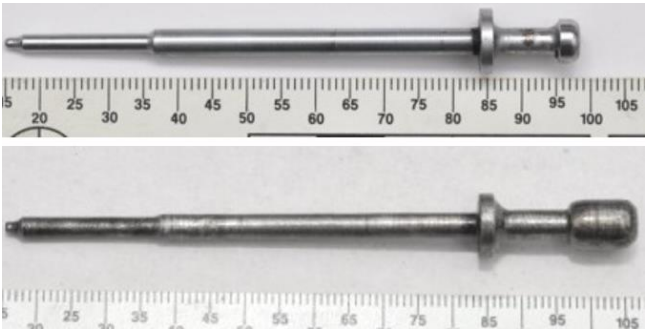


Fig. 4. The homemade firing pin (at the bottom) used in the modification of Airsoft gun in comparison with the striker M-16 (on top)

During research on shells and bullets obtained while experimental test samples firing, the group characteristics corresponding to the M-16 assault rifle were established. Traces allowing us to conclude that these bullets and cartridges were fired from non original weapons were not found. It was assumed as far as while shooting they contacted only with original details, such as gun barrel, breech block and breech-locks.

In the ballistic laboratory of the Israel police dozens of various Airsoft rifles modifications of different manufacturers were analyzed. It is established that for their forensic research the procedure used to study the M-16 rifle can be perfectly used. Due to the fact that studied objects are not standard weapons but illegal upgrading of items that are not weapons, they cannot be defined as weapons by default. Therefore expert is asked to determine whether the studied object is the weapon, as well as to find out what modifications were made, whether the details of original weapons were used etc. Another procedure difference was the decision that shooting will be performed using a device for remote shooting. The reason for this was the fact that studied object is not an original weapon and in some cases its basic parts are made of plastic (Figure 6) and not of metal therefore there is a possibility of destruction of the sample or uncontrolled shooting.



Fig. 5. Airsoft rifle hammer modified to strike on tang of firing pin and for live ammunition fire



Fig. 6. Made of plastic basic parts of Airsoft rifle upgraded for firing live ammunition

Greatest difficulties during forensic examination of modified Airsoft rifles can occur while determining phase whether studied object is original weapon or should be referred to homemade/modified weapons. In some cases it is not difficult task since caliber and affiliation with Airsoft are indicated on the studied object. Sometimes manufacturers not only do not specify the correct caliber on marking but they also mislead indicating the 5.56 mm caliber and serial number (Figure 7) what in some cases could lead to false identification of studied object as original M-16/M-4 assault rifle. Besides,

once a modified version of the Airsoft rifle was obtained which one of markings was cut off. As a result of the research it was established that the inscription MADE IN HONG KONG was cut off (Fig. 8).

Besides above mentioned, during the research with both modified and unmodified Airsoft samples a question about assigning their parts to weapons came up. In accordance with current legislation of Israel, firearms are also parts of this firearm. Practice has shown that there are commercially available samples of Airsoft rifles which parts (including trigger and basic parts) can be used for firearms without modification or with minimal modification. Consequently a question came up whether it will be lawful to refer them to firearms according to law definition?



Fig. 7. Markings on Airsoft rifles with correct caliber indication (on the left) and indicating the caliber used for copied weapon (on the right).

Fig. 8. The sample obtained for examination with marking cut off (above) and original sample of the same manufacturer (below)

For example the Israel Customs Administration has submitted for examination a package detained on the mail with a detail that according to marking is receiver of the M-4A1 assault rifle, caliber 5.56 mm, serial number M320461 (figure 9). Unique external difference were two marked but not drilled holes. After these holes were drilled using a conventional hand drill, the elements of the trigger were installed in this detail, the top of body with barrel gun and breech block was attached then a shot was fired. On the other hand, marking on the package indicated that it was sent from the site ebairsoft.tw (while examination the site was unavailable). The buyer claimed that he had ordered this detail to replace the broken detail of his Airsoft rifle (during a search unmodified Airsoft rifle with a damaged corpus was found).



Fig. 9. Item detained at customs (arrows indicate un-drilled holes)

Information on increasing the number of modified Airsoft rifles and on possibility of using their parts has been transferred to competent authorities responsible for control on arms trafficking. Thus Israel Ministry of Public Security that is responsible for weapons control launched an initiative to expand current legislation and establish control over Airsoft models that can be upgraded for firing live ammunition.

Cases of upgrading Airsoft rifles are known not only in Israel but also in other countries[1] and their number is increasing. Therefore in our opinion presented information can be useful for ballistic researchers regardless of their territorial location, as simplicity of modification of Airsoft rifles for live ammunition fire allows further distribution of this illegal modification.

КРИМІНАЛІСТИЧНЕ ДОСЛІДЖЕННЯ ГВИНТІВОК AIRSOFT, МОДИФІКОВАНИХ ДЛЯ СТРІЛЬБИ НАБОЯМИ КАЛІБРУ 5,56×45 ММ

П. В. Гіверц

Останнім часом експерти балістичної лабораторії поліції Ізраїлю зіткнулися з новим різновидом атипової вогнепальної зброї — пневматичними гвинтівками Airsoft, модифікованими для стрільби набоями калібру 5,56×45 мм. Гвинтівки Airsoft призначені для стрільби не металевими сферичними снарядами діаметром шість міліметрів. Усі різновиди конструкцій Airsoft можна розділити на три основні групи: а) пружинні, у яких використовується енергія стислої пружини; б) електричні, у яких тиск стисненого повітря забезпечується електричним

[1] From Replica to Real. An Introduction to Firearms Conversions. Small Arms Survey. Issue Brief № 10, February 2015. URL: http://www.smallarmssurvey.org/ fileadmin/docs/G-Issue-briefs/SAS-IB10–From-Replica-to-Real.pdf (access date: /04/2018); Florquin N. and King B. From Legal to Lethal. Converted Firearms in Europe. Small Arms Survey, April 2018. URL: http://www.smallarmssurvey.org/fileadmin/ docs/U-Reports/SAS-Report-Europe-Conversion.pdf (access date: 20/04/2018).

насосом; в) так звані Gas Blowback, у яких використовуються балони зі стисненим газом. Найчастіше конструкції Gas Blowback мають значне зовнішню, а також конструктивну подібність із реально існуючими зразками зброї. Так, різні компанії випускають гвинтівки Airsoft, що є копіями штурмової гвинтівки М-16. Такі зразки можуть містити ударно спусковий механізм, конструкція якого повністю копіює конструкцію ударно спускового механізму М-16. Більше того, у деяких зразках розміри деталей також повністю повторюють розміри реальної зброї. Це дозволяє модернізувати гвинтівку Airsoft шляхом установки нарізного дула калібру 5,56×45 мм (який можна придбати в США через Інтернет) і використання оригінальної затворної рами. Також на дослідження в лабораторію надходили зразки модернізованих гвинтівок Airsoft, у яких перероблялися затворні рами пневматичної гвинтівки, що дозволяло обходитися без використання цих частин вогнепальної зброї. Найчастіше ідентифікація досліджуваного зразка як атипичної зброї утрудняється через нанесення виробником написів і маркувань, аналогічних маркуванням оригінальних гвинтівок М-16. У статті обговорено методики криміналістичного дослідження цього типу саморобної вогнепальної зброї.

Ключові слова: атипова зброя, модифікована зброя, Airsoft, М-16.

КРИМИНАЛИСТИЧЕСКОЕ ИССЛЕДОВАНИЕ ВИНТОВОК AIRSOFT, МОДЕРНИЗИРОВАННЫХ ДЛЯ СТРЕЛЬБЫ ПАТРОНАМИ КАЛИБРА 5,56×45 ММ

П. В. Гіверц

В последнее время эксперты баллистической лаборатория полиции Израиля столкнулись с новой разновидностью атипичного огнестрельного оружия — пневматическими винтовками Airsoft, модифицированными для стрельбы патронами калибра 5,56×45 мм. Описаны основные типы винтовок Airsoft и методы, применяемые для их модификации. Рассмотрены примеры таких модификаций, методики экспертного исследования и сложности, с которыми может столкнуться эксперт во время проведения экспертиз.

Ключевые слова: атипичное оружие, модифицированное оружие, Airsoft, М-16.

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USE OF INFORMATION AND REFERENCE COLLECTIONS FOR TRACE EVIDENCE EXAMINATIONS

Using issues of informational and reference collections while performing of trace evidence examinations are analyzed. Legal grounds for controlling different types of informational and reference collections of in SSRFC departments of the MIA of Ukraine are considered. Separately using illustrations, collection

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possibilities while examination of footwear impressions evidence, glove prints and breaking tools, as well as features of their using are investigated.

Keywords: trace evidence examination, object of research, collection, identification, group affiliation, feature, forensic scientist, trace-forming mechanism.

Research extent depends on questions asked a forensic scientist while performing various types of trace evidence examination. They can be divided into two groups: related to trace-forming mechanism (non-identifying) and related to establishment of specific individual characteristics (identifying). As N. I. Klymenko points out that identifying research represents the higher level of research in order to solve problems that are most definite and categorical. They establish identity of the investigated object and have the most probative value in criminal and other processes[1].

However, even in absence of traces of individual feature complex and conclusion about unsuitability of a trace for identification; a forensic scientist establishes the kind of trace-forming object according to general features reflected appear in traces[2]. Procedure basis for establishing a group affiliation is one or another method of comparing object features with their material reflections on another carrier object. At the same time the research ends with establishment of non-identity but with establishment of group affiliation (grouping).

As M. G. Shcherbakovsky notes "one of purposes of using natural objects from collections is establishment of qualitative or quantitative properties of real evidences, attributing them to certain object groups (kinds). This process is accomplished by comparing a real evidence with samples from collections which results in coincidence and differences in their generic characteristics. Evaluation of these coincidences or differences allows to determine that the investigative real evidence belongs to (or does not belong) a group (kind, class) of relevant objects in the collection that is a result of a certain trace-forming mechanism, etc."[3]

According to the instruction of the MIA of Ukraine, "information and reference collections are intended for objects using located therein while forensic researches, creation of scientific researches and engineering developments, updating of the methodological and forensic science normative base, preparation of indicative information, information generalization about

[1] Klymenko N. I. *Sudova ekspertolohiia: kurs lektsii: navch. posibnyk dlia stud. yuryd. spets. vyshch. navch. zakl.* [Forensic Experology: Series of lectures: tutorial for Higher school students specialized in Legal Sciences]. Kiev : View. House "Yin Yure", 2007. 528 p.

[2] Golodansky Yu. P. Forensic examination of traps of tools of hacking. Moscow : VNII OOP under the Ministry of Public Health of the RSFSR, 1966. 56 p.

[3] Shcherbakovsky M. H. The procedural nature of the objects of information and reference collections. Theory and Practice of Forensic Examination and Criminology: Sb. sciences works Kharkiv : Right, 2012. Issue: 12. p. 113-119.

causes and conditions of committing crimes and other offenses for their prevention them". Objects which certain collections are formed from are indicated[1].

Problems of formation, maintenance and use of the information and reference collections are devoted to academic studies R. S. Belkin O. O. Belyakov, O. O. Belov, V. V. Biriukov O. F. Volynskyi, G. L. Granovskyi, I. M. Evsuguìn, O. V. Pakhomov, O. V. Poleschuk, E. O. Razumov, M. V. Saltevskyi, O. R. Rossinska, R. A. Usmanov and others. Using issues of information and reference collections while performing certain types of forensic researches was investigated before. However this study aims to demonstrate the possibility of information and reference collections using while performing trace evidence examinations in particular.

Indeed, it is impossible to imagine performing forensic ballistic examinations without using a complete collection of firearms, ammunition or reference data on traces of firearms on bullets and cartridges; performing technical examinations of documents certifying a person or accompanying vehicles without original documents of similar sorts; performing a research on narcotic without their reference samples, etc.

While performing trace evidence examinations and studying certain traces forensic scientists face great difficulties because in most cases they have to draw a conclusion about the object as a whole according to a small reflection of a trace-forming object. Such problems are encountered while research on footwear impressions, gloves traces, breaking tool traces, etc. There are occasions when forensic scientist could not determine the type of trace-forming objects and report only about their certain group which can leave signs in the traces. In most cases this is due to the lack of appropriate systematic materials as well as various information and reference collections containing information about trace-forming objects, their images or other information[2].

Use of information and reference collections while an examination is usually performed on the stage of comparative research, when according to results of separate research a certain group of signs intrinsic to a particular object is already defined. Having a number of objects of a respective information and reference collection it is easy for a forensic scientist to perform a comparison, for example, with image of footwear impression or vehicle tires, structure of gloves material and determine a group affiliation. Moreover, if collections contain not only information about a particular object but natural o footwear samples directly, gloves or tools for breaking obstacles.

[1] On approval of the Instruction on the organization of the operation of forensic records of the expert service of the Ministry of Internal Affairs: an order of the Ministry of Internal Affairs of Ukraine from 10 September. 2009 № 390. Official bulletin of Ukraine. 2009. № 82.

[2] Alenichev P. N. Traces of weapons of hack: study. allowance Moscow: UCCU MOOP RSFSR, 1962. 67 p.

It is possible to perform certain forensic experiments with, to find out trace-forming mechanism dynamic trace, for example.

For preparation purpose of various all-points-bulletins, search tables and for using trace evidence examinations in future; different types of information and reference collections we created in Cherkasy SRFC of MIA of Ukraine for many years even before the SSRFC of the MIA reform.

So, for several years a collection of footwear impressions evidence having more than 10 thousand objects was created. As objects number increases in the collection, it was systematized according to footwear types (winter, summer, sports, classic, male, female, etc.). Information and reference collection of gloves containing natural samples of gloves and their experimental imprints created and successfully used. Newly created collection of combination pliers to indelicate kind and type of tool that wire or cable has been broken with or has been cut through, for example. These collections can be successfully used while performing examination of footwear impressions evidence, gloves traces and breaking tool traces examinations.

Let's consider it in greater detail.

Use of Information and reference collection images of footwear impressions while performing examination of footwear impressions evidence. This examination objects are usually footwear impressions, duplicated on segments of dark dactyl film (traces of layering or detachment), duplicated on segments of a sticky tape (surface painted traces), axonometric footwear impressions usually fixed in plaster casts. Recently, more and more photographs of footwear impressions discovered during review of the scene are delivered for research (Fig. 1-4).

Unlike axonometric traces where footwear impression leaves a full trace or with full reflection of outsole or heel part, surface footwear impressions (layering or detachment) of outsole or heel parts of footwear are reflected fragmentarily, in most cases. While researching such little informative traces to determine the sort and type of footwear that trace is left with and sometimes even correctly describe trace image configuration a forensic scientist will be able to use images of parts of footwear sole. The larger is the content of such a collection the better is the result of its use because in reality footwear with similar image elements of sole image, their modifications in configuration and size are very large. In the case of such footwear type identification the focus should be done on trace-forming object that means the sole, since there is even more diversity of footwear upper with the same configuration of the sole image.



Fig. 1, **2.** Footwear impression provided for examination and the footwear sole image of the contained in the reference collection images



Fig. 3, **4.** Footwear impression provided for examination and the footwear sole image of the contained in an information and reference collection

Because of complexity of using a collection containing only images it is impossible to use an image while examination of dynamic or in some cases static-dynamic traces to perform a forensic experiment, to recreate the trace-forming mechanism, for example. For example, at a stage of a separate research a forensic scientist to determine which type or sort a trace was left with there has not gotten enough received information while examining reflection of relief part of a footwear sole in the trace. This may be due to a minor reflection of image in a trace or due to the numerous overlaying of the elements on each other. However, having a collection of footwear soles images, a forensic scientist can make a definitive conclusion and answer asked questions. In addition, having found a similar image of footwear, a forensic scientist will be able to describe better a sole image reflected in the track.

The use of gloves information and reference collection while trace evidence examination of gloves. Traces of gloves are usually found on surfaces covered with layers of dirt, dust, sweat and grease substance fragments of papillary lines etc. Thereafter traces of gloves duplicated in most cases on segments of sticky tapes are glued on a sheet of paper are provided for examination (Figs. 5–10).

At the stage of a separate research it is difficult for a forensic scientist to distinguish among other things the material image structure to determine what sort or type of gloves to attribute this trace.



Fig. 5. Glove footwear impressions provided for examination





Fig. 6, **7.** Knitted gloves with figured inclusions placed in the information and reference collection and their imprints



Fig. 8. Glove traces provided for examination



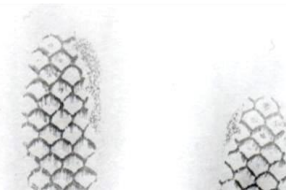


Fig. 9, **10.** Domestic rubber gloves placed in the information and reference collection and their imprints

Thus, the presence of gloves in the traces of the reflection of loop structure along with which parallel rows of rounded or other shapes are located can indicate that traces were left with knitted gloves with a protective impregnation on the inside. However, taking in account variety of possible inclusions on the knitted fabric as well as the different structure of rubber material, skin substitute, skin of various types, etc. For determining the issue from which material is made a glove that is left the mark with reference collection image gloves can help a forensic scientist. Considering natural samples and their imprints and if necessary having made a series of tests, leaving static and dynamic traces of different types of gloves, forensic scientist can make conclusion about gloves type, material, trace-forming, etc.

Use of information and reference collection of breaking tools while trace evidence examination of breaking tools. Having an idea about breaking tool traces remaining as a result of a tool working parts, two main groups of traces that remain at the scene can be distinguished. These are traces of spin left by the working parts of the mounting (lever) tool (wrecking bar, crowbar, legs, etc.) and traces of cutting through and section — traces formed by the working part of combination pliers (cutters, scissors, tongs, etc.). (Figs. 11-18).

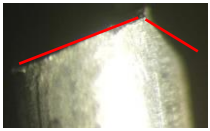


Fig. 11. Cutting trace submitted for examination



Fig.12. Working part of cable cutter placed in the information and reference collection

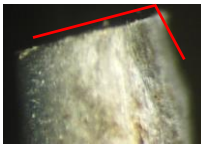


Fig. 13. Cutting through trace submitted for examination



Fig. 14. Working part of the wire cutter placed in the information and reference collection



Fig. 15. Cutting through trace provided for examination



Fig. 16. Working part of internal parts of pliers placed in the information and reference collection



Fig. 17. Cutting through trace provided for examination



Fig. 18. Working part of bolt cutter placed in the information and reference collection

In the last case, a more thorough study of separation ends allows thorough differentiation of common features in traces on these areas and to determine the characteristics of sort, subsort, subspecies etc. In this purpose it is necessary to investigate geometry of separation area (the front and rear corners of the sharpening of cutters, trace evidence character, etc.) and geometry of incisors working parts or other parts of breaking tools or tools similar to those left the traces that means determining the set of all constructive elements such as cutting angles, sizes and shapes of cutting edges, forms of the front and back surfaces, radius of joined cutting edges, etc.[1]

If is difficult for a forensic scientist on this stages of a separate study to determine the type and kind of breaking tools, he can use a collection of instruments and establish that traces are traces of section (fig. 11, 13) or

[1] Tretiakov I. P. Arshynov V. A. Kyselev N. F. Synopalnykov V. A., Laboratory works on the course "Cutting of metals": for machine-building. high schools and fac. Moscow: Mechanical Engineering, 1965. 147 pp.

cutting traces (fig. 15, 17), since instruments are of the same type of working parts (fig. 12, 14 and fig. 16, 18) leave similar traces.

Summarizing the above it should be noted that use of information and reference collections while performing trace evidence examinations in procedural form (while performing forensic examinations) is a simple and accessible auxiliary mechanism for correct and scientifically based solution for questions asked a forensic scientist. The effectiveness of using such collections depends on the number of objects or information volume contained in, their systematization and classification, as well as forensic scientist ability to apply objects of these collections at one or another stage of forensic research.

ВИКОРИСТАННЯ ІНФОРМАЦІЙНО-ДОВІДКОВИХ КОЛЕКЦІЙ ПРИ ПРОВЕДЕННІ ТРАСОЛОГІЧНИХ ЕКСПЕРТИЗ

В. В. Кожевніков

Проаналізовано питання використання інформаційно-довідкових колекцій при проведенні трасологічних експертиз. Розглянуто правові підстави ведення інформаційно-довідкових колекцій різних видів у підрозділах Експертної служби МВС України. Окремо з використанням ілюстрацій досліджено можливості колекцій при проведенні експертизи слідів взуття, слідів рукавичок і слідів знарядь зламу, а також особливості їх використання.

Ключові слова: трасологічна експертиза, об'єкт дослідження, колекція, ідентифікація, групова належність, ознака, експерт, механізм слідоутворення.

ИСПОЛЬЗОВАНИЕ ИНФОРМАЦИОННО-СПРАВОЧНЫХ КОЛЛЕКЦИЙ ПРИ ПРОВЕДЕНИИ ТРАСОЛОГИЧЕСКИХ ЭКСПЕРТИЗ

В. В. Кожевников

При проведении трасологических экспертиз объем исследования зависит в большинстве случаев от тех вопросов, которые поставлены эксперту. Вопросы бывают идентификационные (установление тождественности, групповой принадлежностей) и неидентификационные (установление механизма следообразования). И хотя идентификационные исследования имеют большую весомость при установлении истины и определенное доказательственное значение в уголовном и других процессах, исследования неидентификационного характера также важны. Ведь благодаря им эксперт устанавливает вид следообразующего объекта по общим признакам, отобразившихся в следах.

Значительной помощью при проведении трасологических экспертиз неидентификационного характера является использование информационно-справочных коллекций.

Использование натурных объектов из коллекций позволяет установить качественные или количественные свойства вещественных доказательств, отнести их к определенным группам (родам) предметов. Это осуществляется путем сравнения объекта исследования с образцами из коллекций, в результате чего определяются совпадения или расхождения их родовых признаков. Оценивание этих совпадений или расхождений позволяет определить, что исследуемый объект

принадлежит (или не принадлежит) к группе (роду, классу) соответствующих предметов из коллекции, или что он возник вследствие определенного механизма следообразования. Если же эксперту, например, необходимо выяснить механизм следообразования динамических следов, то имея натурные объекты коллекции, с ними можно провести ряд экспертных экспериментов, по результатам которых прийти к определенному выводу.

Итак, использование информационно-справочных коллекций при проведении трасологических экспертиз в процессуальной форме (во время выполнения экспертиз) является простым и доступным вспомогательным средством для правильного и научно обоснованного ответа на поставленные эксперту вопросы. Эффективность использования таких коллекций зависит от количества объектов или объема информации, которая в них содержится, их систематизации и классификации, а также умения эксперта применить объекты указанных коллекций на той или другой стадии экспертного исследования.

Ключевые слова: трасологическая экспертиза, объект исследования, коллекция, идентификация, групповая принадлежность, признак, эксперт, механизм следообразования.

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RESEARCH SPECIFICS OF SEPARATE TYPES OF CYLINDER LOCKS OPENED WITH SELF IMPRESSIONING LOCK PICKS

Method of self impressioning using the way of unlocking cylinder locks is considered. Design of a self impressioning lock pick is provided. Traces of a self impressioning lock pick are systematized. Problem points of research on cylinder locks exposed to the self impressioning lock pick effect are listed.

Keywords: Key words: unauthorized unlocking, self impressioning method, self impressioning lock pick, cylinder locks, traces, microrelief.

Forensic research on locks takes an important place in prevention, qualification, crime disclosure and investigation of property crimes related to house penetration, so- called burglaries. Analysis of the modern forensic science practice has established increase acts of unauthorized (criminal)

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unlocking cylinder pin locks with horizontally oriented keyhole[1] (Fig.1) that has become widespread in last years that contributes a large number of manufactured devices (manufactured in PRC for the most part) for unlocking indicated above locks, namely lock picks operating on the principle of self impressioning and can be purchased through the Internet, as well as a larger number video materials regarding their use.

In the available forensic literature (textbooks, manuals, scientific articles) only singles more or less current and actual ways of unauthorized unlocking of cylinder pin locks using of foreign objects with developed recommendations according research on such as manipulation method by means of a selected forged key and lock bumping are covered. Method of self impressioning that is the basis for unlocking modern locks tahat is mastered and successfully used by "qualified", burglars, in modern criminalistics is not mentioned at all. Therefore the purpose of this article is to highlight forensic research possibilities of certain types of cylinder pin locks, unlocked by means of an manufactured self impressioning lock pick.



Fig. 1. Cylindrical pin mechanism for a mortise lock with a horizontally positioned keyhole

The article pays attention to such problem aspects: method of self impressioning using the way of unlocking a lock with a cylinder mechanism design features of self impressioning lock pick to cylinder locks, dealing with the solution of diagnostic and identification issues; traces classification of self impressioning lock pick remaining on lock details; difficulties research on cylinder locks that were subjected to the action of self impressioning lock.

Method of self impressioning (самоімпресії)[2] (in this case it is necessary to combine two multilingual words: Ukrainian "само", that means "self", and the English "impression" (imprint, impression) creating a phrase approximated in translation as "self-imprint", or "self-installation", that is the

[1] In DSTU and other literature there is no terminology that delimiting cylinder pin mechanisms to locks with vertically and horizontally oriented keyhole. This article is devoted to their last type.

[2] URL: http://www.wikizamki.org/index.php/Методы_и_инструмент_для_вскрытия_дверей_и_замков.

basis for unlocking method of a lock with a cylindrical mechanism consists in the introduction of a specially adapted workpiece with a plastic (capable of deformation) working surface accompanied by the complete drowning of working pins into cylinder channel. In future, while implementing certain manipulations during unlocking a lock due to the difference in the lengths of pairs of pins (and as a consequence of the difference in the springs pressure force), the gradual self-reconstruction of the pins according to the cylinder mechanism code occurs (by pushing work pins into the plastic working layer of workpiece) that leads to cylinder deblocking and possibility of its rotation that means activation of deadbolt carrier.

So why do criminals prefer precisely the method of self impressioning? First it is a non-destructive method therefore in most cases external manifestations and traces that indicate unauthorized unlocking of lock are absent[1]. Locking device remains in good condition, so the criminal can easily lock a lock again and use the lock pick more than once. Secondly using self impressioning lock pick is quite simple, it does not require relatively the acquisition of special skills. Thirdly it is the speed of unlocking a lock. Thanks to experiments carried out have found that the locking of a lock using pre-fitted self impressioning lock pick takes less than one minute in most cases. Fourth, it's silence. There is no noise while using lock pick.

It should be noted that this method is used not only by criminals. In many countries of the world it is used by specialized services for emergency doors opening, based on the listed benefits.

Let’s consider design of the most common manufactured self impressioning lock pick for locks with cylinder mechanisms manufactured in PRC[2]. As noted these self impressioning lock picks can be purchased on the Internet in different versions, both the minimum and the extended (fig. 2). Self impressioning lock is multicomponent device with following components: base (1), needle (2), handle (3), foil workpieces (4), plate for manufacturing and squeezing of foil workpieces (5), key for clamping the base in handle (6). These components fulfill their functions exclusively, so let's stop separately on each of them.

The base for self impressioning lock is manufactured from metal (alloy) that according to its strong characteristics can withstand considerable loads. One side surface of the base, thanks to its structural features (form, dimensional characteristics, presence and mutual arrangement of grooves for safety devices) repeats workpiece of key shaft to a cylinder lock of a certain manufacturer factory, on the second side (working surface) is a longitudinal cut (one or more) designed to mount the needle and foil. This lock pick detail performs the same basic functions as the key shaft. In general the device kit contains several labeled bases. Each of these bases is intended to unlock the cylinder lock of a certain manufacturer.

[1] URL: https://www.youtube.com/watch?v=3rShvuI0a_0.
[2] URL: http://otmychki.in.ua/impressiya.

The needle of a self impressioning lock pick (manufactured from metal) serves for drowning working pins in cylinder channel while inserting a device into keyhole due to the bevel at its end. In future the needle will be removed.

Handle serves to fix the lock pick base (clamping the screw using a key) and perform the function of lever while manipulating and turning the cylinder.

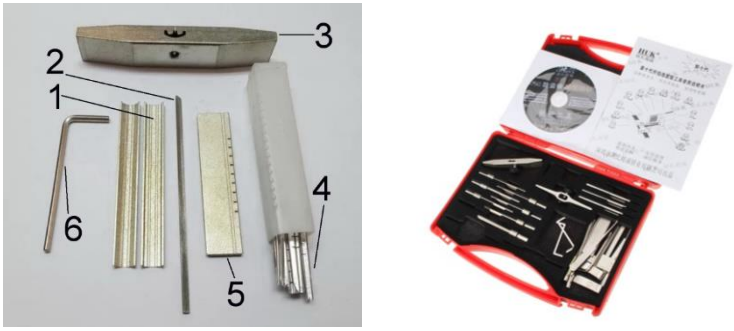


Fig. 2. Sets of self impressioning lock picks

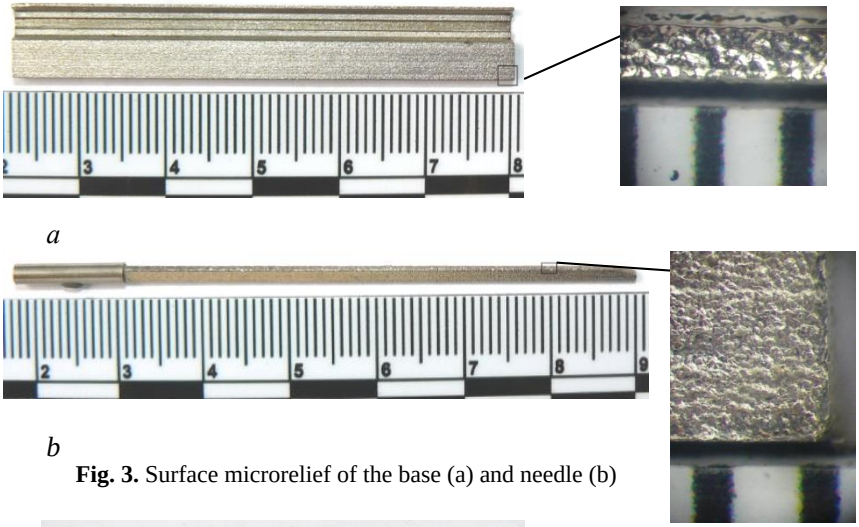
The foil workpiece acts as a plastic layer of a lock pick. This component has a specific bending shape like the letter "M", in the section. On the surface of the workpiece, a number of thin rectilinear incisions oriented transversally that contributes to pins pinching.

While unlocking the lock with self impressioning lock pick only three components the base, the foil and the needle, come into contact with cylinder mechanism details, and the last does not always contact but while partial breaking of foil or deformation of linear incisions edges at the time of device introduction or release of the needle. That is why these components are most interested in the context of the of solving diagnostic and identification issues.

As it was noted, the base and needle are manufactured from metal, and their surfaces have a specific, unique microrelief (chaotically located, smoothed, prominences and deepening of various shapes) due to peculiarities of workpieces manufacturing of billets by the powder metallurgy (Fig. 3) indicated surfaces even without damage because of operational nature leave the individual, inherent only to them, traces of reflection.

Foil workpiece while using lock pick remains in the cylinder channel, both completely and in the form of fragments. It should be added that criminals leave near the door, on stairs, stairwells, deformed (used) foil workpieces. So attention should be paid when scanning crime scene based on the facts of burglaries (Fig. 4).

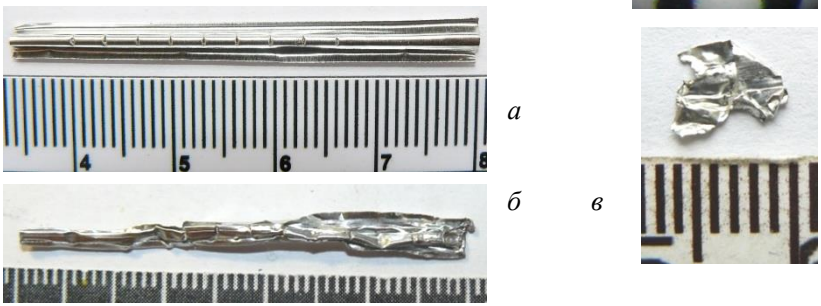
Taking into account the experience gained while research of cylinder locks delivered to SSRFC of the Ministry of Internal Affairs of Ukraine, Dnipro, during last years in the sector of trace evidence research types and accounting, systematization of traces that could be formed while using self impressioning lock picks was performed. As it is well known criminalistics shares all features of action with using foreign objects (in the context of the research on locks) into three General groups[1]: Reflection traces of contact surfaces of foreign objects on lock details; the damage formed as a result of foreign object actions; foreign objects and substances are not inherent to certain construction.



a

b

Fig. 3. Surface microrelief of the base (a) and needle (b)



а *б* *в*

Fig. 4. Standard foil workpiece (a); deformed (used) foil workpiece, found on the scene (b); foil workpiece fragment, found in the cylinder during research on cylinder lock (c).

[1] *Trasologija i trasologicheskaja jekspertiza : uchebnik* [Trace evidence and Trace evidence examination : manual] A.G. Sukharev [and others]. Saratov : Saratov State Academy of Law, 2010 [in Russian].

Reflection traces that can be left while using a self impressioning lock pick:

— static, dynamic and combined (static and dynamic) contacting surfaces of lock pick basis formed on the channel side of the cylinder key while the introduction, manipulations and removing a device (Fig. 5);

— dynamic contacting surfaces needle traces formed on the heads of working pins while introduction and removing (Fig. 6);

Subjects and substances that remain while using a self impressioning lock pick:

— a foil workpiece in a keyhole, as a whole and in the form of fragments;

— a large amount of liquid lubricant (type: WD-40) on the inside of the one side of cylinder mechanism (its use is recommended in the video materials using self impressioning lock picks to enhance details cylinder lock mechanism, according to expert practice, it is used not always).

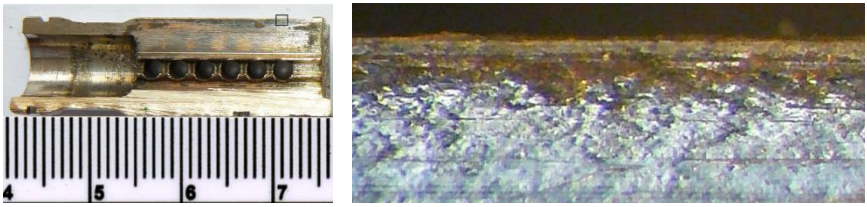
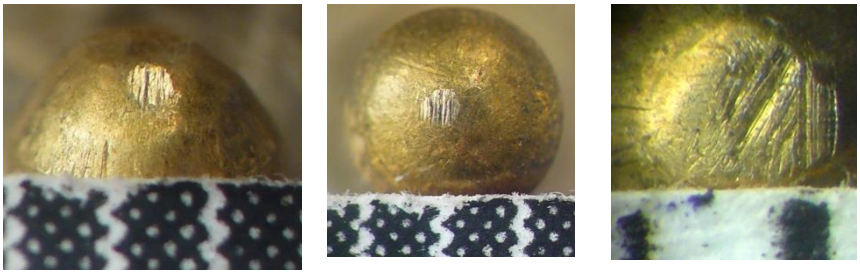


Fig. 5. Microrelief reflection of lock pick basis on the surface of a lock cylinder channel



(Fig. 6. Dynamic traces of contacting surface of needle on the heads of pins

As already mentioned, damage does not arise while using a self impressioning lock pick; a lock remains in good condition.

While cylinder locks researching exposed to the action of a self impressioning lock pick; there are a number of problem points, for example: while producing locks manufacturers use various metal alloys that differ according to

their strength properties[1], therefore reflection traces of contacting surfaces of the base so weakly expressed that they cannot be separated from the traces of ordinary key; traces from the needle on heads of working pins not always formed, but only when the foil is damaged or incorrectly mounted; self impressioning lock traces are formed by the repeated action of one or another device component therefore they are often planted one by one which leads to creation or destruction of their features; high probability of foil fragments loss while removing a lock during the scene review.

It should be added that presence of traces of self impressioning lock pick on lock details does not indicate the fact of its criminal unlocking with the device[2]. As forensic practice demonstrates traces or damage that indicating cylinder turning and the commissioning of the deadbolt guides are not formed while using a self impressioning lock.

To summarize it should be noted that a large number of modern methods of unauthorized unlocking locks in forensic literature are not covered. So we hope that article content will help forensic scientists in their practical activities.

ОСОБЛИВОСТІ ДОСЛІДЖЕННЯ ОКРЕМИХ ВИДІВ ЦИЛІНДРОВИХ ЗАМКІВ, ВІДІМКНУТИХ САМОІМПРЕСІЙНИМИ ВІДМИЧКАМИ

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Розглянуто метод самоімпресії, закладений у спосіб відмикання циліндрових замків. Наведено конструкцію самоімпресійної відмички. Систематизовано сліди, які вона залишає. Перелічено проблемні моменти в дослідженні циліндрових замків, що піддавалися дії самоімпресійної відмички.

Ключові слова: несанкціоноване відмикання, метод самоімпресії, самоімпресійна відмичка, циліндрові замки, сліди, мікрорельєф.

ОСОБЕННОСТИ ИССЛЕДОВАНИЯ ОТДЕЛЬНЫХ ВИДОВ ЦИЛИНДРОВЫХ ЗАМКОВ, ОТКРЫТЫХ САМОИМПРЕССИОННЫМИ ОТМЫЧКАМИ

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Рассмотрен метод самоимпрессии, заложенный в способ отпирания цилиндровых замков. Приведена конструкция самоимпрессионной отмычки. Систематизированы следы, какие она оставляет. Перечислены проблемные моменты в исследованиях цилиндровых замков, на которые воздействовали самоимпрессионной отмычкой.

Ключевые слова: несанкционированное отпирание, метод самоимпрессии, самоимпрессионная отмычка, цилиндровые замки, следы, микрорельеф.

[1] *Trasologicheskoe issledovanie mehanicheskih zamkov : metod. posobie* (1998) [Trace evidence research on mechanical locks : methodical textbook] / Berger E., Prokhorov-Lukin G., Moliboga N. and others. Kyiv : Editorial department of Ministry of Internal Affairs of Ukraine, 96 p. [in Russian].

[2] *Metodyka trasolohichnoho doslidzhennia zamkiv. Ekspertna spetsialnist 4.2 «Doslidzhennia znariad, ahrehativ, instrumentiv i zalyshenykh nymy slidiv, identyfikatsiia tsiloho za chastynamy»* (2015) [Method of trace evidence research on locks. Forensic scientist specialty 4.2 "Research on tools, machines, instruments and their traces, identify the whole identification according to details parts"] / Kostrub A. M. Grishchenko O. V. Chyrba D. E. and others Kyiv : SSRFC of the Ministry of Internal Affairs of Ukraine, 41 p. [in Ukrainian].

FORENSIC SCIENCE OF MATERIALS, PRODUCTS, AND ARTICLES

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CURRENT OPPORTUNITIES FOR A COMPREHENSIVE RESEARCH ON FIBER STRUCTURE MATERIALS DAMAGE

Development Topicality of performing methodology expert examinations on the establishment of the mechanism of damage formation (chemical, thermal, mechanical, biological) fibrous materials, which are often appointed in the investigation of criminal cases of various categories. The questions of solving a number of tasks of forensic examination by means of application of modern instrumental methods, in particular, raster (scanning) electron microscopy, which allows to reveal qualitatively new micro-signs of volumetric character, micro-relief of surfaces of ends of textile fibers and adjacent to them sites are considered.

Keywords: forensic examination of materials, substances and products, investigation of fibrous materials and products from them, chemical, biological, thermal and mechanical damage of fibrous materials.

The use of modern advances in science and technology plays an important role in improving the efficiency of judicial and expert institutions. Expert research of objects of fibrous nature is relevant and promising for the establishment of factual data when investigating cases of different categories. Objects of the fibrous nature belong to the objects of everyday use of each person, occur in virtually every criminal situation with grave crimes against a person, is the belonging of the offender, the victim and other persons who are related to the event and form elements of its material environment. Objects of fibrous nature, in particular clothing, interact continuously with other objects

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of both fibrous and other nature. Much of the crimes is committed in conditions of active interaction between the subject of the crime and other persons with different objects, resulting in the clothes, the body of the offender or the victim, the instruments of the crime, the objects of a criminal offense and other objects related to the crime, may remain different fibers in the form of traces of layers.

The development of forensic examination of fibrous materials and products from them poses new tasks, the solution of which is impossible without a comprehensive study of both textile materials and fibers themselves. Increasingly important for the investigation of crimes is the investigation of the damage of clothing as a result of the use of guns, vehicles, etc. and the development of expert methods based on the results obtained. Investigation of clothing damage is one of the main areas of examination of materials, substances and products in relation to objects of fibrous nature.

Among the main issues to be resolved in forensic examination of fibers and fibrous materials is the question of establishing a mechanism for causing damage to them. So, one of the issues mentioned in the Scientific and methodological recommendations on the preparation and appointment of forensic examinations and expert studies is the question: "What damages (mechanical, thermal, chemical) exist on the provided product?"[1].

Experiments on the establishment of the mechanism of damage (chemical, thermal, mechanical, biological) materials, fibers are often appointed in the investigation of criminal cases of various categories. At the same time, a damage differentiation, detecting the mechanism of their creation is difficult and problematic. When conducting the examination of fibrous materials and products, it becomes necessary to analyze the features of the structure and the formation of defects, both on the surface and inside the fibers. Importance in the investigation of fibers is to systematize detected microdefects, mechanical and other damage by type of fibers, etc.

The successful solution of a number of litigation tasks is facilitated by the use of modern instrumental methods, among which the raster (scanning) electron microscopy takes the appropriate place, which makes it possible to detect qualitatively new microscopes of volumetric character (for example, using an electronic raster microscope REMMA-101A). According to expert practice, these methods are sufficiently informative to solve expert problems. The advantage of these methods is the high resolution of electronic optical

[1] *Pro zatverdzhennia Instruktsii pro pryznachennia ta provedennia sudovykh ekspertyz ta ekspertnykh doslidzhen ta Naukovo-metodychnykh rekomendatsii z pytan pidhotovky ta pryznachennia sudovykh ekspertyz ta ekspertnykh dos-lidzhen: nakaz Ministerstva yustytsii Ukrainy vid 08.10.1998 № 53/5 (zi zminamy ta dopov.)* [On approval of the Instruction on the appointment and conducting of forensic examinations and expert studies and scientific and methodological recommendations on the preparation and appointment of forensic examinations and expert studies: The order of the Ministry of Justice of Ukraine of 08.10.1998 № 53/5 (as amended and supplemented)]. URL: http://search.ligazakon.ua/l_doc2.nsf/link1/REG3145.html [in Ukrainian].

systems and the visibility of the received information about fibers. This makes it possible to directly observe the peculiarities of the microstructure of textile fibers, to make photographic fixation and to use photographs as illustrative material in expert opinions.

The research of fibers in order to find out the changes in the structure of fibers, which occurs as a result of mechanical processing, bleaching, the influence of various operating factors and external conditions, have been devoted to the work of such domestic and foreign scientists as K. A. Kostrova, S. V. Putintseva, T. O. Kuzmina, K. V. Illarionova, V. M. Beregin, I. A. Yermilova, S. V. Grigoriev, V. V. Gavrilyak and others[1].

Despite the wide coverage in the scientific literature of questions on the study of textile fibers, the problem of expert investigation of the damage of materials of fibrous structure, single fibers in particular, using a raster electron microscope remains insufficiently researched. Taking into account the mentioned, as well as the absence of such methods in the Register of methods of conducting forensic examinations of the Ministry of Justice of Ukraine, today its relevance is not in doubt. In connection with the above, according to the thematic plan of research work of the research institutes of forensic examinations of the Ministry of Justice of Ukraine, the research work on the theme "Development of the methodology for the complex study of biological and other damage of fibrous materials by methods of raster electron microscopy is carried out. The executors of this topic of research work are employees of the Kharkiv Scientific Research Institute who have the qualifications of a judicial expert with the right to conduct expert assessments of materials, substances and products, as well as trace evidence, ballistic and biological examinations.

In the course of R&D, the collection of materials and the conduct of experimental research on the reproduction of various injuries: mechanical, chemical, thermal and biological. Beginning with the microscopic study of damage to materials (fabrics, knitwear), first of all, it is necessary to establish the nature of the fibers, because the nature of destruction under the same external conditions depends on the strength characteristics of the fibers, their nature and is determined by the shape of the cross-section. For example, the

[1] *Kriminalisticheskoe issledovanie voloknistyh materialov i izdelij iz nih.* (1986) [Forensic research on fibrous materials and products from]. Moscow, Issue IV. 139 p. [in Russian]; *Metodychni rekomendatsii do vykonannia laboratornykh robit z dystsypliny «Osnovy tovaroznavstva vyrobiv»* [Methodical recommendations for the implementation of laboratory work on the discipline] Basics of commodity study of products. Moscow : Kherson: Kherson National Technical University, 2014. 112 p. [in Russian]; *Harakteristika fiziko-mehanicheskih pokazatelej hlopkovyh volokon novyh selekcionnyh linij* [Characteristics of physico-mechanical indices of cotton fibers of new breeding lines] / K. V. Yllaryonova, V. M. Berehyna, Y. A. Ermylova, S. V. Hryhorev. Textile industry, 2006. № 1–2. P. 16–19 [in Russian]; Havryliak V. V. *Ultrastrukturni doslidzhennia vovnianoho volokna za normy ta patolohichnoho stonshennia. Biolohiia tvaryn* (2011) [Ultrastructural studies of wool fiber for norm and pathological thinning. Biology of animals]. V. 13, № 1–2. P. 71–75 [in Ukrainian].

shape of cotton fibers in the longitudinal direction is ribbon-shaped, spirally twisted around its axis, with a channel in the center, with a curvature of the shaft. The fibers of the wool are cylindrical in shape and consist of flaked (cuticular) and root layers, in oval fibers, in addition, there is a core channel. The chemical fibers in the longitudinal direction are smooth, uniform in thickness; shape of the cross-section is round. Among the various materials, the most common ones were selected, which most often fall into the field of forensic expertise.

The following materials were damaged on samples of materials:

a) mechanical damage:

— formed as a result of shock-contact interaction with the striking elements (bullet, punch, fraction, etc.);

— for the formation of which used knives (with a sharp and not sharp blade; with one and two-sided sharpening of the blade, crushed and cut bits were applied);

— for the formation of which the blades were used (sharp and non-sharp);

— for the formation of which used glass (window, headlight, bottles);

— for the formation of which were used sew (acute and inferior);

— for the formation of which used screwdrivers (sharp and inferior);

— for the formation of which used scissors (with a sharp and non-sharp blade);

— for the formation of which used knives of the ax (with a sharp and non-sharp blade);

— as a result of the rupture (through stretching the hands, hooks for the surface acting);

— friction on the asphalt pavement of the road;

— from hitting a hammer, a sledgehammer;

b) chemical damage, formed by the action of concentrated sulfuric, nitric, hydrochloric, formic acid, 80 % phenol, 10 % sodium hydroxide solution;

c) thermal damage, formed under the action of open and closed fire;

d) biological damage caused by bacteria, fungi, insects, rodents, etc.

Biodegradation of textile materials caused by microorganisms and their products of life is expressed by coloration (the appearance of spots on textile materials), defects (the formation of bloating on the colored surface of textile materials), the penetration of microorganisms into the fiber, the deterioration of mechanical properties (for example, decrease in the strength of the gap), loss mass, change in chemical and other properties. The most dangerous pest, which is characterized by the ability to mass annual reproduction and causes significant economic losses, is the costume and Tinea pellionella. Many species of bark beetles, which are common in nature, are pests of skin and fur.

Also, there are bi-destruction of textile materials and products produced by mammals, namely: rodents (rats, mice), predators (Canidae — dogs).

For experimental research, all lesions were formed in at least three repetitions and studied in the field of view of stereo and optical microscopes (fibers from damage zones). Individual objects were prepared — threads of yarn from damage zones, which were gradually investigated using a raster electron microscope. These studies were aimed at obtaining and studying bulky images of the ends of damaged fibers in order to identify the diagnostic features that are reliable.

Pre-fibers were fastened to a special metal object holder with the help of conductive adhesive. The samples were pulverized by a platinum-carbon mixture using electron-beam vaporizers in a vacuum pressurizing plant (pressure 10^{-5} mm Hg).

While performing research with raster electron microscopy, features of the structure and microrelief of the surface of the ends of the chemical fibers were revealed. In studying the damage of fibers obtained from sharp and dented blades razors, knifes, glass, screwdrivers, scissors, sewed, ax, as a result of shock-contact interaction with the striking elements (bullet, card, fraction, etc.), at the discontinuity set the set of features, allowing to determine with a sufficiently reliable mechanism of trace formation.

The end surfaces of the ends of the fibers from the damage zones may be perpendicular to the axis of the fiber or at an angle to it, concave or convex, smooth, smooth, without track tracks, or with microstructures formed by the slightest defects of an acting, usually acute object, which are arranged parallel to one or chaotic. If the end face is uneven, a general view of the boundary section, which can be walked (with protruding and alternating ledges), jagged, zigzag, boat, with protruding circular formations, is examined; the details of the microrelief (configuration, localization) and other features are studied in detail.

While investigating a zone that directly adjoins the end, attention is drawn to the presence or absence of thickening, thinning, flattening, the formation of a ridge around the whole stake or only on separate sections, the presence or absence of staggered zones of damage, the elements of extinction, crushing, fragmentation, dismemberment, abrasion and so on. For damage from a series of mechanical actions characterized by significant deformation of the ends of the fibers. In this case, attention is drawn to the nature and degree of deformation, the size of the plot along the length of the fiber, in which, to varying degrees, the signs of deformation and structural change are expressed.

Typical characteristics for the ends of fibers separated by a sharp knife with one-sided blade sharpening at a cut at a right angle is the presence of an even surface of the end of the fibers with parallel microstructures left by the

smallest microdefects of the blade; The line of the edge section of the end is concave at a right angle to the axis, there is a thickening of the ridge or a pronounced tendency toward its formation (Fig. 1).

If the blade is blunted, the end surface of the fibers from the damage zone is not so smooth, there are inequalities in the individual areas, no microstructures, thickening of the ridge is well pronounced, along with the typical features for the incision there is a new appearance like the spindle of the end surface.

For fibers separated by sharp scissors, a slightly concave rib line is typical, a tendency towards thickening — a ridge, slight inequalities and rugosity, shrinkage on the end surface, absence of microcircuits, but, unlike the previously described lesions, qualitatively new features are recognized: delicateness and a certain flattening in the area adjacent to the end. Under the action of scissors that have blunt blades, the stem is observed at the end surface (Fig. 2).

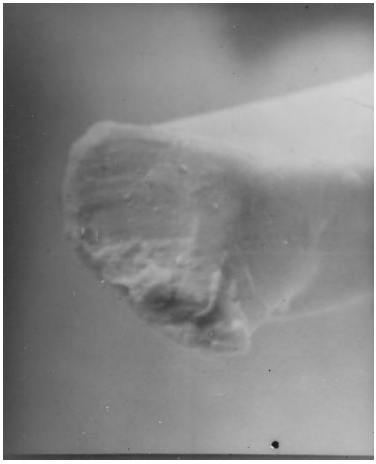


Fig. 1. Fiber divided by the action of an acute knife with one-sided blade sharpening at a cut at a right angle



Fig. 2. Fiber divided by scissors, with blunt blades

When cutting the glass reveals a significant deformation, roughness of the ends of the fibers; along with this there are endpoints of fibers with characteristic features of the cut: the formation of a rim, a relatively smooth face, but the micro-roads on the end are characterized by a different orientation, chaos. A completely different picture occurs when the screwdriver acts. The end surface of the ends of the fibers is uneven, changes

in the diameter of the fibers (thickening of the rim) are not observed, but on the surface, as a rule, there is a section with a significant depression, while the edge of the end is toothed or protruding. Under the action of the sew, an inequality of the end surface and a peculiar shift in one side of the fiber end are noted.

At a cutting with an acute ax, attention is drawn to the presence of relatively flat end surfaces, flattening (compression) and mildness (Fig. 3)



Fig. 3. Fiber divided by a sharp axial rupture

Characteristic of damage to fibrous materials by bursting are crumbling, fluffy, flattened and chaotic ends of the fibers. The mechanism of the formation of ruptures is to stretch the threads of the materials with the subsequent rupture, as a result of which the torn threads have spindle-shaped folding ends. The ends of the fibers separated by stretching (rupture) are characterized in that the end face is perpendicular to the axis of the fiber, curved, with some irregularities; thickening of the rim, changes in diameter along the length is not observed.

In the investigation of other mentioned lesions, certain characteristic features of the ends of fibers are revealed, the detailed description of which will be presented in the following scientific publications.

It should be noted that the examination of damage to objects of fibrous nature, as well as scientific research in this field, are impossible without knowledge in the fields of textile materials science, technologies for the production of fibrous materials and products from them, trace evidence, which is itself studying the mechanism of trace formation.

The development of this type of research is in close connection with a deeper study of the structure of the object. Paintings of damage resulting from mechanical actions on chemical fibers are due to their microscopic structure and degree of regulation of the orientation of the macromolecules relative to the axis of the fiber.

At this stage of the study, there is every reason to believe that the chosen

direction of scientific development is promising, since the combination of features for each type of fibers provides a reliable diagnostic aspect of a set of indicators that allow differentiating and establishing the existing factors, objects and, if there is a database, to develop informationally -search system.

Detection and detailed study of damage of fibrous materials (clothing) in a complex study by experts-criminologists and forensic experts allows you to identify the object that caused injury to a person, compare and correlate traces and damage detected on the body and clothing, correctly evaluate them.

When solving the issue of the type of damage, in the absence of tools for damage, the expert must compare the signs established in the investigated damage, with the characteristics known to him, characteristic of various types of damage — cut, chopped, chopped, milled and others, and to reach a conclusion on the possible the type of the instrument, which is the investigated damage.

Conducting complexes of experimental investigations of various types of damage of various fibrous nature of materials allows obtaining an information database of the data, the possibility to differentiate the damage of chemical, mechanical, thermal and biological character, to identify micro-markers that individualize one or another subject (factor) of action, influence, increase the potential obtaining trace information about the actual data and circumstances of the event in those cases when external morphological signs to diagnose the damage impossible.

The obtained data testify to the effectiveness of the chosen research direction. The results of the conducted researches are positive for creation of the optimum scheme of researches, methods of microscopic researches of damages of materials of fibrous nature for the purpose of solving diagnostic and identification tasks of forensic examination.

СУЧАСНІ МОЖЛИВОСТІ КОМПЛЕКСНОГО ДОСЛІДЖЕННЯ ПОШКОДЖЕНЬ МАТЕРІАЛІВ ВОЛОКНИСТОЇ СТРУКТУРИ

Т. Є. Балинян, Л. М. Дереча

Зазначено актуальність розроблення методики проведення експертиз зі встановлення механізму утворення пошкоджень (хімічних, термічних, механічних, біологічних) матеріалів волокнистої структури, які досить часто призначаються при розслідуванні кримінальних справ різних категорій. Розглянуто питання вирішення низки завдань судової експертизи за допомогою застосування сучасних інструментальних методів, зокрема, растрової (скануючої) електронної мікроскопії, що дає можливість виявляти якісно нові мікроознаки об'ємного характеру, мікрорельєф поверхні кінців текстильних волокон і прилеглих до них ділянок.

Ключові слова: судова експертиза матеріалів, речовин та виробів, дослідження волокнистих матеріалів і виробів із них, хімічні, біологічні, термічні та механічні пошкодження матеріалів волокнистої природи.

СОВРЕМЕННЫЕ ВОЗМОЖНОСТИ КОМПЛЕКСНОГО ИССЛЕДОВАНИЯ ПОВРЕЖДЕНИЙ МАТЕРИАЛОВ ВОЛОКНИСТОЙ СТРУКТУРЫ

Т. Е. Балинян*, *Л. Н. Дереча

Среди основных решаемых вопросов судебной экспертизы волокнистых материалов есть вопросы относительно установления механизма образования их повреждений. Экспертизы по установлению механизма образования повреждений материалов довольно часто назначаются при расследовании уголовных дел разных категорий. При этом дифференциация повреждений, установление механизма их образования вызывают трудности и являются проблемными. Успешному решению ряды задач судебной экспертизы содействует применение современных инструментальных методов, среди которых соответствующее место занимает растровая (сканирующая) электронная микроскопия, позволяющая непосредственно наблюдать особенности микроструктуры текстильных волокон, проводить фотофиксацию и использовать фотоснимки как иллюстративный материал в экспертных заключениях. Для выполнения исследований собирали материалы и проводили эксперименты по воспроизведению разных повреждений: механических, химических, термических и биологических. При проведении исследований с помощью растровой электронной микроскопии выявили особенности строения и микрорельеф поверхности концов волокон. При решении вопроса о виде повреждения, при отсутствии орудия повреждения, эксперт должен сопоставить признаки, установленные в исследуемом повреждении, с известными ему признаками, характерными для разного рода повреждений и прийти к выводу о возможном виде орудия, которым нанесено исследуемое повреждение. Проведение комплексов экспериментальных исследований разных за характером повреждений различных материалов волокнистой природы дает возможность дифференциации повреждений химического, механического, термического и биологического характера, выявления микропризнаков, которые индивидуализируют предмет (фактор) действия, увеличения потенциала получения следовой информации о фактических данных и обстоятельствах события в тех случаях, когда за внешне-морфологическими признаками диагностировать повреждения невозможно. Результаты проведенных исследований являются положительными для создания методики микроскопических исследований повреждений материалов волокнистой природы с целью решения диагностических и идентификационных задач.

Ключевые слова: судебная экспертиза материалов, веществ и изделий, исследование волокнистых материалов и изделий из них, химические, биологические, термические и механические повреждения материалов волокнистой природы.

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EXPERT STUDY OF MICROCOLOGY OF DRUGS, PSYCHOTROPIC SUBSTANCES AND PRE-DRUGS

The method of forensic research of trace amounts of some narcotic drugs, psychotropic substances, precursors and toxic substance — scopolamine with the help of chromatographic mass spectrometric analysis and high-performance liquid chromatography with mass spectrometric detector is given.

Keywords: controlled substances, narcotic drugs, opium alkaloids, chromato-mass spectrometry, high-performance liquid chromatography with mass spectrometric detector.

In the investigation and prosecution of criminal cases involving illicit trafficking in narcotic drugs, psychotropic substances and precursors, micro-objects discovered at the scene of crime, as well as on objects related to the crime and its participants, are becoming more and more evidentiary.

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The forensic study of micronutrients of narcotic drugs, psychotropic substances and precursors in relation to 0.1-0.5 mg of substance has a number of distinctive features related to the improvement of the techniques used, which is due to the small volume of substances, the number of their forms, the variety of carriers, the specificity of the bonds of trace amount substances with objects of carriers, etc. The microcosm of narcotic drugs, psychotropic substances and precursors are often used in investigative, judicial and expert practice as a source of information about the circumstances of a criminal case, since information about their nature, the location of the discovery of a micro object, the form of the carrier object represents value for the solution of many issues. It allows you to determine the location and method of making narcotic drugs, as well as the source of their acquisition and sale.

In expert practice, narcotic drugs and psychotropic substances often act as research objects, which are rarely individual compounds. At the same time, the greatest difficulty arises in the study of substances that are multicomponent systems and mixtures containing a large number of impurity and ballast substances, as well as low concentrations of active substances. Difficulties encountered in the investigation of such objects are due to the following reasons:

— complexity of separating multicomponent systems and purifying from ballast substances and impurities;

— complexity of concentration of dilute solutions.

All this complicates the identification of the substance and served as the basis for the development of a method for the investigation of microcosm of narcotic drugs, psychotropic substances and precursors.

The tendency for the development of forensic expertise shows that more and more research methods are being used in various fields of science and technology, and the technical arsenal of expert institutions and research methods in the production of expertise are increasingly being improved.

In the field of forensic research of micro objects of narcotic drugs, psychotropic substances and precursors, the key to obtaining new information is the use of more adequate and precise methods and methods of research. Despite the fact that chromatographic analysis is the most common method of analysis of narcotic drugs, psychotropic substances and precursors, recently, due to the high informativeness, sensitivity and selectivity in the world practice of forensic and medical examination, methods of gas chromatographic mass spectrometry are increasingly used. (GC-MS)[1] and

[1] *Hromato-mass-spektrometricheskoe issledovanie polusinteticheskih narkoticheskih sredstv / T. H. Halikov, M. U. Abdullaeva, R. K. Ahmedova, L. V. Zaharova. Materialy konf., posvjashh. 55-letiju sud. jekspertizy RUz* [Chromatography mass-spectrometry research on semisynthetic drugs / T. Kh. Khalykov, M. U. Abdullaeva, R. K. Akhmedova, L. V. Zakharova]. Conferences content, dedicated to the 55th anniversary of forensic examinations in the Republic of Uzbekistan. Tashkent, 2006; *Kompleksnoe kriminalisticheskoe issledovanie narkoticheskih sredstv na osnove konopli, maka*

high-performance liquid chromatography with a mass spectrometric detector (HPLC-MS).

The use of the HPLC-MS method is most optimal in the study of narcotic drugs, psychotropic substances and precursors by reducing the amount of sample preparation, since there is no need for the phase of evaporation of reagents and the production of derivatives, and it is possible to identify non-volatile substances that cannot be analyzed by GC-MS[1].

The proposed method was tested in the study of narcotics (heroin, morphine, opium, fentanyl, etonitazen, methamphetamine, cocaine), psychotropic substances (zolpidem, clonidine, bromazepam, clonazepam, ketazolam, nitrozepam, nozepam, cyclodol, metaqualone, allobarbital, barbital), precursors: pseudoephedrine, ephedrine — a drug — cyclodol and a poisonous substance: scopolamine.

Due to the fact that objects entering the expert research exist in extremely diverse forms (loose, viscous, liquid, compressed, resinous, granular, etc.), it is very difficult to designate the quantitative criteria of a micro object. From expert practice we have noted that compliance with certain requirements of experts in the field of study of objects in terms of the size of individual particles, mass, or volume is not always complied with and is not always possible, as often on the investigation material evidence arrives with barely noticeable signs when viewed visually foreign matter on their surface. And sometimes the presence of narcotic drugs is only assumed by the investigator within the circumstances of the case. Thus, the microcosm of narcotic drugs is often present on objects of carriers in the form of layers, overlays, individual particles, etc.

It has been experimentally established that the minimum amount of a drug, a psychotropic substance or a precursor that allows the study to be carried out in the form of a solid sample is 1 mg, in the form of a liquid — 1 ml. However, in the case of studying the trace amounts of these substances on various items of carriers (tissue, paper, washings, hands, shelves, syringes, needles, etc.), these quantity definitions are not applicable.

When investigating microcurrents of narcotic drugs, psychotropic substances or precursors on various subjects, the expert is asked questions concerning:

— establishing the nature of objects and assigning them to narcotic drugs, psychotropic substances or precursors;

— establishment of common group belongings on the basis of a single source of origin, etc.

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opijnogo i geroina sovremennymi instrumental'nymi metodami [Comprehensive forensic research on cannabis, opium poppy and heroin drugs using modern instrumental methods] / M. U. Abdullaeva, T. Kh. Islamov, T. Kh. Khalykov and others Tutorial for students. Tashkent : RTsSE, 2006 [in Russian].

[1] Pfleger K. Mauere H. Weber A. Mass Spektral and GS Data of Drugs. Part 2, 3. New York. 1992; Clarkes “Isolation and identification of drugs”, 2nd ed. London 1986. Chapter 14: Drug overdoses. Oxford Handbook of Acute Medicine. 2nd ed. Oxford University Press, 2004. P. 791–838.

The initial stage in the study of objects entering the examination for the purpose of detecting traces of narcotic drugs, psychotropic substances or precursors on them is their visual inspection with a magnifying glass, as well as inspection with the help of methods of optical microscopy, and in the case of discovery of individual particles, their withdrawal, fixation and extraction is made. active components. Removal or fixation of individual particles from carrier objects can be made by shaking, flushing with a cotton swab or gauze, scaling with a scalpel or a preparative needle. In the case of examination of syringes and medical needles, repeated washing of their inner surface with an organic solvent is performed. For extraction of narcotics, psychotropic substances or precursors, the most suitable solvents are ethyl alcohol, a mixture of ethyl alcohol with water (1:1), methanol, chloroform, a mixture of methanol and chloroform (9:1) and other organic solvents.

The second stage of the study of microcosm of narcotic drugs, psychotropic substances or precursors is the discovery of active components and concomitant substances by instrumental methods.

The volumes of test substances weighing from 0.1-1 mg, as well as gauze or cotton swabs, were extracted with a minimum amount of ethyl alcohol, providing a sample coating, when weighed more than 1 mg, extraction was carried out in a ratio of 1:10. To accelerate the extraction process, ultrasound treatment was performed on an ultrasound bath for 10 minutes. Multiple washings from syringes, medical needles and various containers were combined. The extracts and washings were evaporated to a volume of 100 μl and used for further analysis.

The chromatographic mass spectrometric analysis was carried out on a chromatographic mass spectrometer of AT 5973 (capillary column, 30 m long, 0.25 mm in diameter, with 5 % phenylmethylsiloxane, mass-selective detector) under the following analysis conditions: ionizing energy electrons — 70 eV, injector temperature — 280 ° C, furnace temperature from 150 to 280 ° C, in a programmable mode with a temperature rise of 15 ° C / min, a sample size of 1 μl, a vapor pressure of the test substance of 10 mm Hg. Art., analysis time — 20 minutes, gas carrier — helium, flow rate — 2.4 ml / min.

Peak identification was carried out in retention time and in mass spectra using library libraries of the device.

Analysis of the obtained chromatograms and mass spectra indicates that the mass spectra of the studied narcotic drugs. psychotropic substances and precursors are characterized by the presence of stable fragments, characteristic ions formed along the general paths of fragmentation of molecular ions. Tab. In tab. 1 shows molecular and typical fragmentation ions of some narcotic drugs, psychotropic substances and precursors, as well as their intensity.

Thus, as a result of the chromato-mass spectrometric study of samples of semisynthetic and synthetic narcotics, psychotropic substances and precursors obtained from carrier objects, their retention time, molecular and fragmentation ions, their intensity, as well as the individuality of the fragmentation of each substance are established.

Table 1

Typical molecular and fractional ions of certain drugs and precursors

№	Name of substances (retention time)	Molecular ions (M +)	Typical ions (m / z) (their intensity)
1.	Amphetamine (1.59 min)	–	44, 91, 65, 120 (100) (22) (15) (3)
2.	Buprenorphine (18.34 minutes)	M^+ 503 (10)	410, 434, 450, 378, 338, 283 (26) (35) (16) (100) (23) (25)
3.	Methamphetamine (1.76 minutes)	–	58, 91, 42, 77, 134 (100) (18) (4) (2) (3)
4.	Cocaine (11.20 minutes)	M^+ 303 (18)	182, 82, 94, 105, 198 (100) (80) (42) (35) (14)
5.	Ephedrine (2.90 minutes)	–	105, 77, 58, 42 (2) (15) (100) (7)
6.	Pseudoephedrine (2.94 minutes)	–	77, 58, 42 (14) (100) (6)

It is recommended that these attributes be used to determine the nature, generic and group membership of narcotic drugs of a semi-synthetic and synthetic nature, psychotropic substances and precursors contained in micronutrients on carrier objects, as well as to solve other criminalistic problems (establishing a uniform mass for raw materials and the method of manufacture, determination the amount of active substance (in the case of a certain mass).

At present, the method of high-performance liquid chromatography in conjunction with a mass spectrometric detector is widely introduced into the expert practice of foreign laboratories, which allows us to determine and provide the most complete information about the analyte. At the same time, the speed, relative simplicity of sample preparation, accuracy and reproducibility of the results obtained is not in doubt.

The volumes of test substances weighing from 0.1-1 mg, as well as gauze or cotton swabs, were extracted with a minimum amount of methanol to

provide a sample coating, when weighed more than 1 mg, the extraction was carried out in a ratio of 1:10. To accelerate the extraction process, ultrasound treatment was performed on an ultrasound bath for 10 minutes. Multiple washings from syringes, medical needles and various containers were combined. The extracts and washings were evaporated to a volume of 100 μl and used for further analysis.

The analysis was carried out on the Agilent Technologist 1100 Series using a degasser, a solvent feeder, an autosampler, a column thermostat, a DAD diode detector, and a mass spectrometric detector. The separation was carried out in isocratic mode using methanol as the mobile phase.

Chromatographic conditions: column Zorbax Agilent Eclipse XDB-C8, 125 × 2 mm, 5 μm, mobile phase — methanol, flow rate — 0.5 ml / min, column temperature — 250 ° C, injection volume — 5 μl, analysis time — 15 min, wavelength 230 nm.

Mass spectrometric conditions: source — electro-spray-ionization at atmospheric pressure (AP-ESI); the analysis was carried out in the modes: positive (signal 1) and negative (signal 2) ionization, temperature of the gas of nitrogen — 250 ° C; the speed is 12 l / min, the pressure is 35 pci, the evaporator temperature is 200 ° C, the voltage is 3 kV, the voltage is 2 kV, the current is 4 mA, the scan range is 100 to 1000 m/z.

To identify the compounds, information was used about their retention time, the maximum absorption in the UV region of the spectrum, and the fragmentary mass spectrum ions.

The chromatograms, UV spectra and mass spectra obtained under these conditions indicate that:

— mass spectra of the investigated compounds are characterized by the presence of stable fragments, characteristic ions;

— all investigated substances have characteristic UV spectra with light absorption maxima, specific for each compound.

Tab. 2 demonstrates molecular and typical fragmentation ions of analyzed narcotic drugs, psychotropic substances and precursors.

Table 2

Protonated molecular ions, as well as fragmentary ions of analyzed narcotic drugs, psychotropic substances and precursors

№	Name substances	Molecular ion (M+)	Typical ions (m / z)
1	"Street Heroin"		
	Monoacetylmorphine	327	330, 326, 325, 287, 286, 267

	Diacetylmorphine (heroin)	369	371, 343, 342
	Acetylcodene	341	355, 342, 325, 300, 286
2	"Opium",		
	Nonscapine	413	445, 415, 414, 341
	Papaverine	339	358, 344, 328, 312
	Tebain	311	313
3	Morphine	285	287
4	Fentanyl	336	337, 338
5	Clofelin	230	229, 232
6	Zolpidem	307	309, 308,
7	Pseudoephedrine	165	187, 166, 148
8	Ephedrine	165	166, 167, 148
9	Nitrazems	281	283, 282 (+) 563, 465, 280 (–) (15) (100) (35) (90) (100)
10	Bromazepam	316	319, 318, 317 (+) (35) (95) (100)
11	Klonazepam	315	317, 316, 314, 195 (–) (5) (30) (100) (35)
12	Nosepam (oxazepam)	286	287, 286, 285 (–) (30) (15) (100)
13	Cyclode	301	302, 303 (+) (100) (20)
14	Scopolamine	383	384, 383 (+) (25) (100)

As follows from the data in Table. 2, while using negative ionization electro-spray, three chromatographic peaks corresponding to monoacetylmorphine, heroin (diacetylmorphine) and acetylcodein are detected in the study of trace amounts of "street heroin". In the opium sample studied, the predominant components were nonscapin, papaverine and tebain with a low content of the remaining opium alkaloids. Representative protonated molecular ions, as well as fragmentary ions, reflecting their structure and structural features of the molecule, were detected in the mass spectra of the compounds studied.

Tab. 3 shows the spectral-chromatographic characteristics of some narcotic drugs, psychotropic substances and precursors.

Table 3

Spectral-chromatographic characteristics of some narcotic drugs, psychotropic substances and precursors

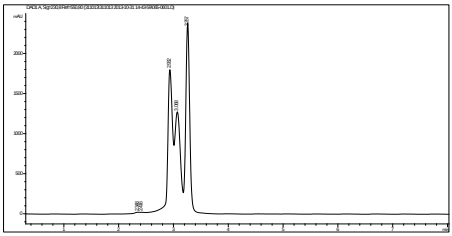
№	Name of substance	Retention Time R_t, minutes	Characteristic maxima on UV spectra, nm
1	"Street Heroin"		
	Monoacetylmorphine	2.9	208, 287
	Diacetylmorphine (heroin)	3.26	210, 280
	Acetylcodene	3.07	212, 282
2	Opium		
	nonscapine	3.2	210, 310
	tebain	2.9	210, 282
3	Morphine	2.95	210, 242, 285
4	Fentanyl	2.98	210, 260
5	Klofelin	3.01	212, 240, 318
6	Zolpidem	3.16	208, 262
7	Pseudoephedrine	2.97	210, 235, 265
8	Ephedrine	2.99	210, 235, 265
9	Nitrazems	9.57	212, 232, 274, 326
10	Bromazepam	8.64	234
11	Klonazepam	9.73	210, 226, 254, 312
12	Nosepam (oxazepam)	3.617	232, 268, 315
13	Cyclode	5,198	212, 254
14	Scopolamine	5.933	234, 276

Most of the controlled substances we tested were composed of complex mixtures, and on the chromatogram, we received, we observed a large number of peaks. Due to the fact that HPLC-MS does not presuppose the use of standard databases of library spectra when decoding unknown substances, the expert's task is to identify among chromatograms available a plurality of peaks, one peak corresponding to controlled substance with the best identifying characteristic being the molecular mass of this substance

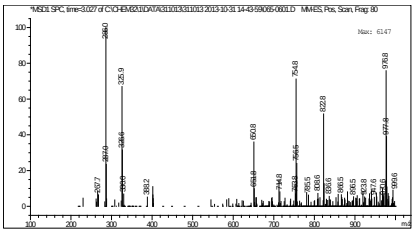
Since the voltage ensuring good fragmentation depends on the structure of the substances themselves, we analyzed the controlled substances we analyzed using two ionization regimes: positive and negative.

Figure 1-25 shows chromatograms, mass spectra and UV spectra of the compounds studied.

”Street Heroin“ Monoacetylmorphine

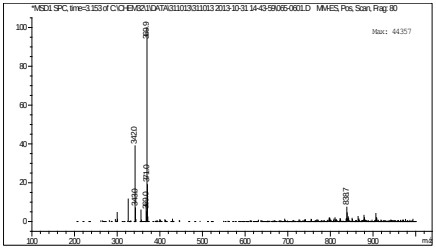


a

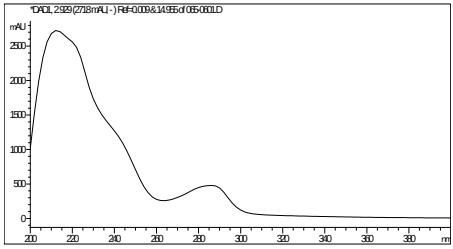


b

Heroin (Diacetylmorphine)

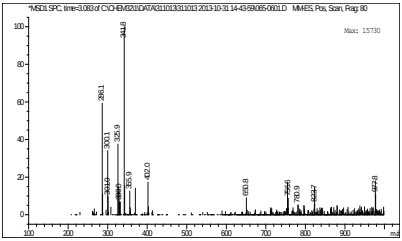


b

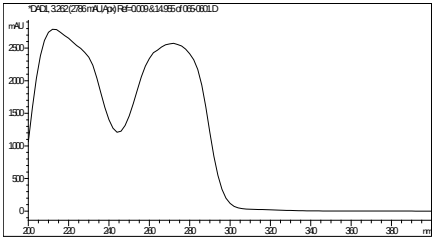


c

Acetylcodene

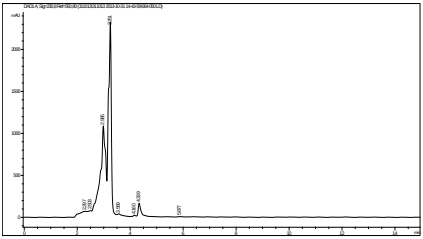


b

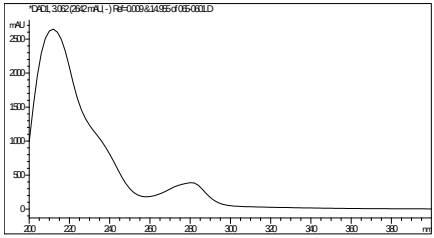


c

Opium

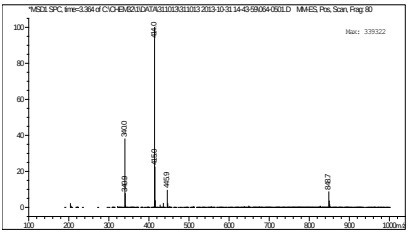


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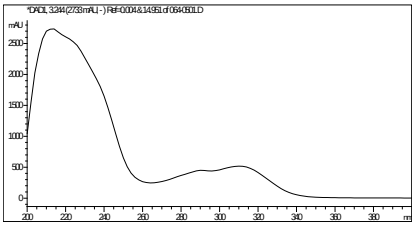


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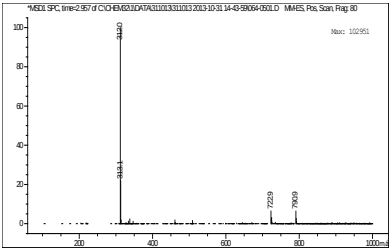


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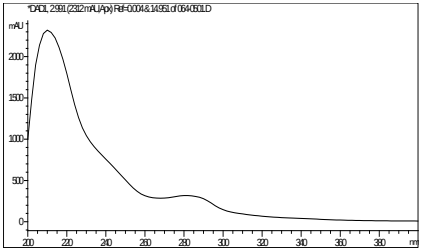


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Tebain

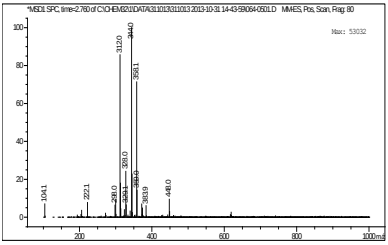


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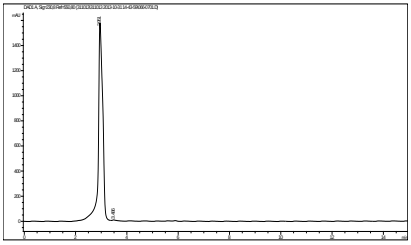
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Papaverine

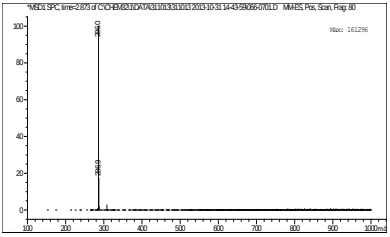


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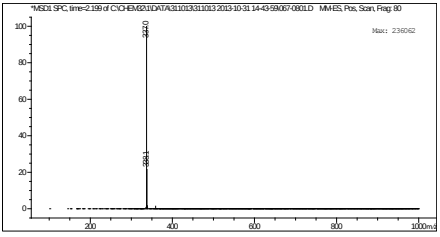
Morphine



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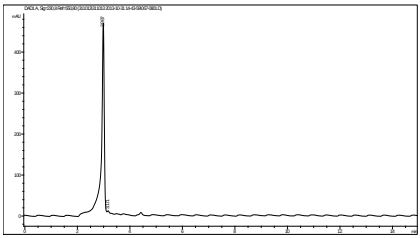


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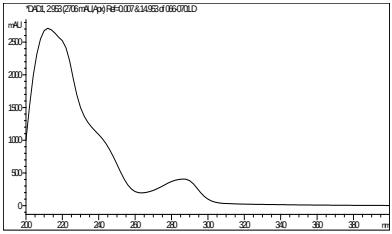


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Fentanyl

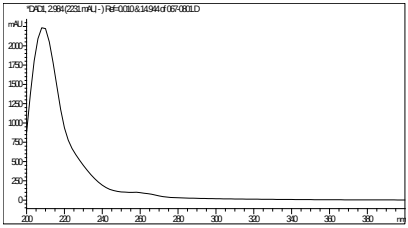


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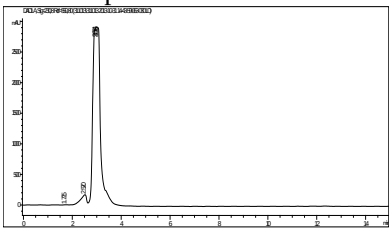


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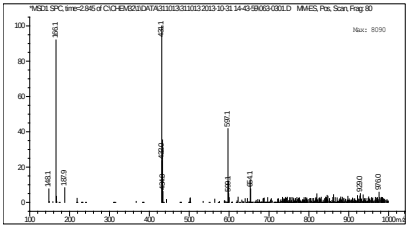
Pseudoephedrine



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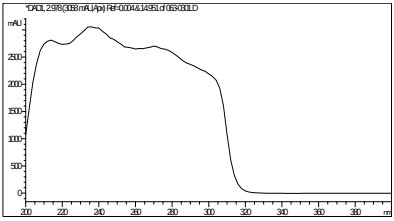


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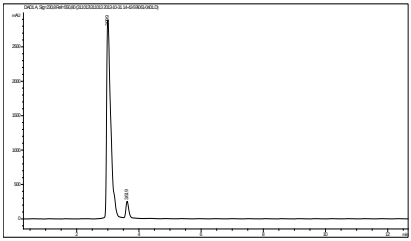


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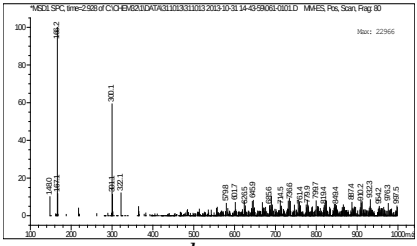
Ephedrine (Theophylline)



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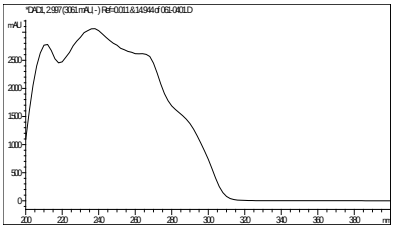


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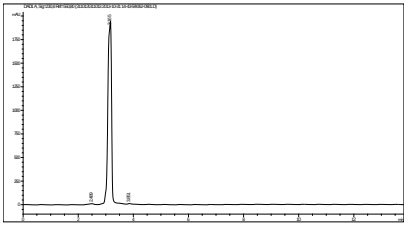


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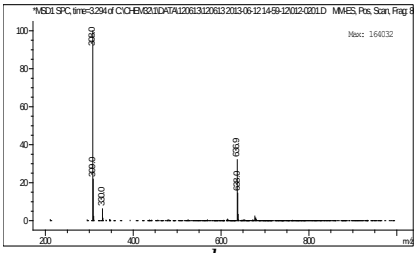
Zolpidem



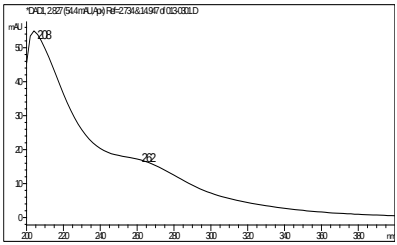
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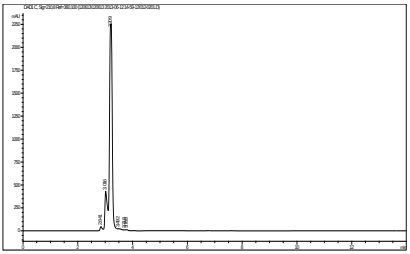


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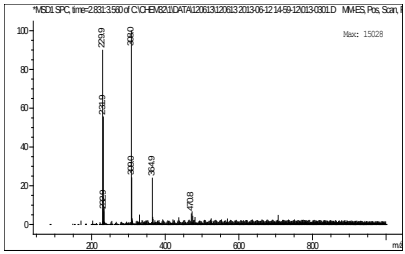


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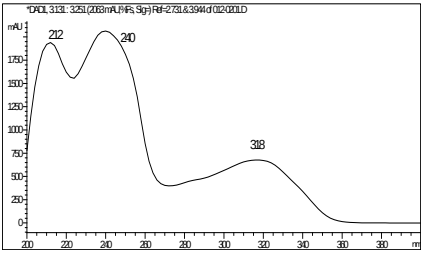


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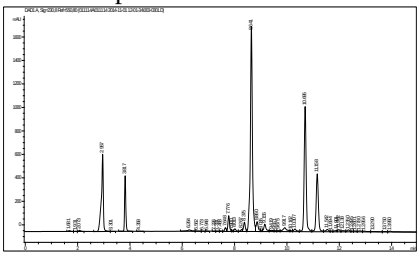


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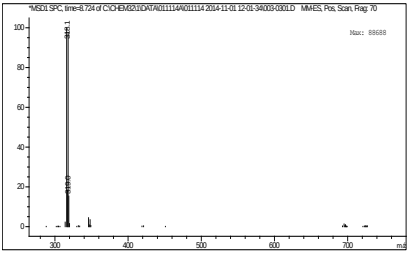
Bromazepam



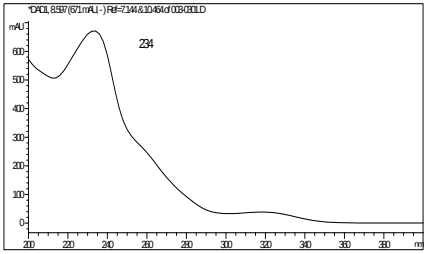
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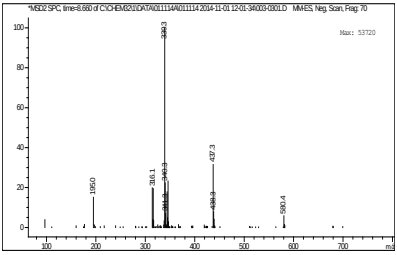


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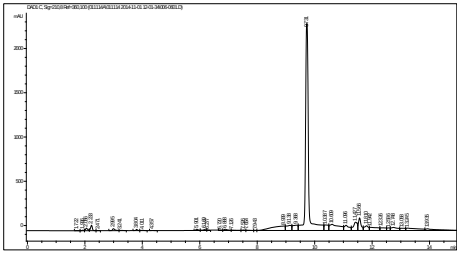


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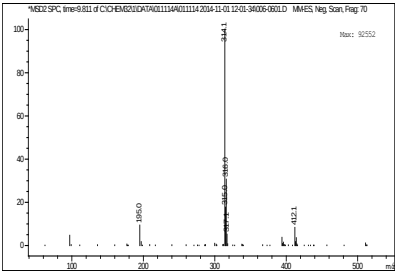
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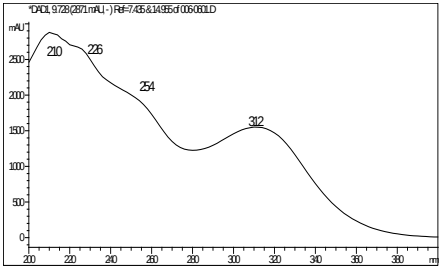
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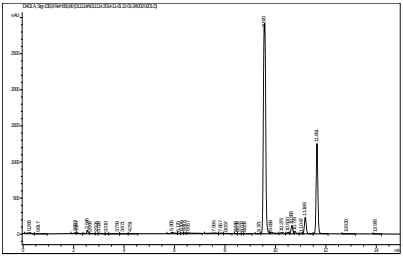


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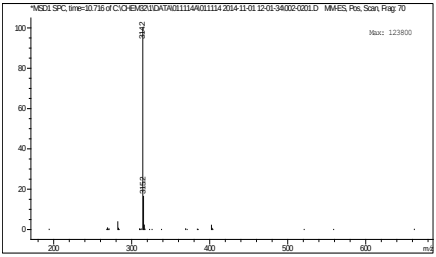


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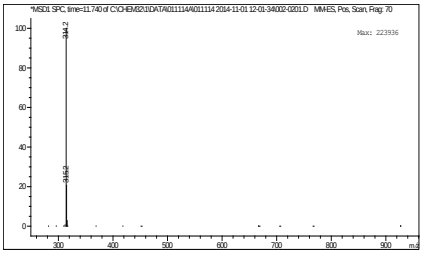
Nitrazems



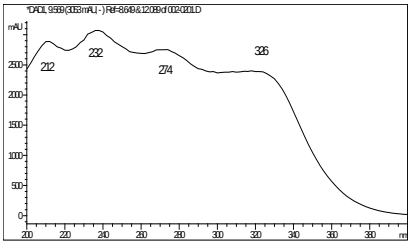
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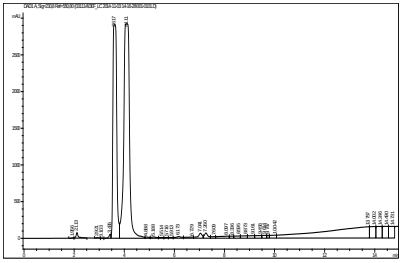


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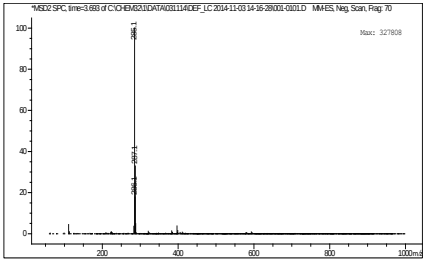


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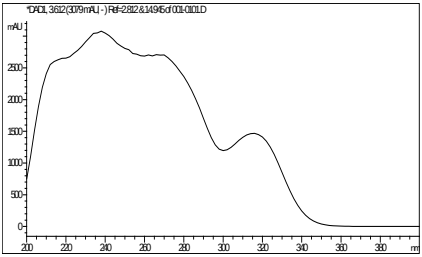


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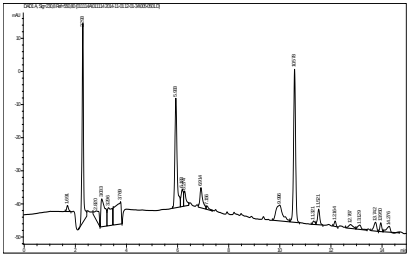


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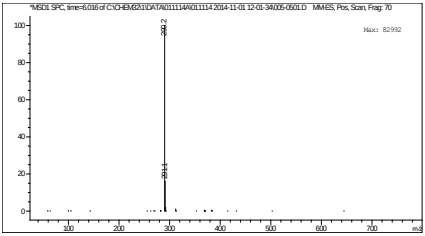
Scopolamine



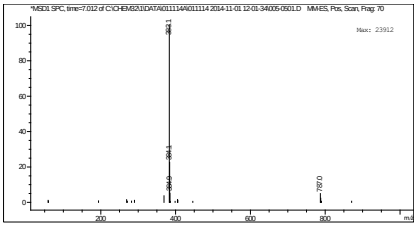
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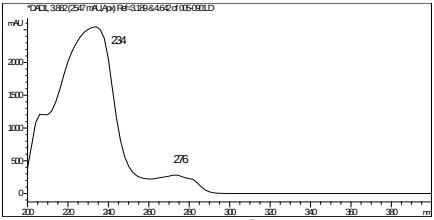


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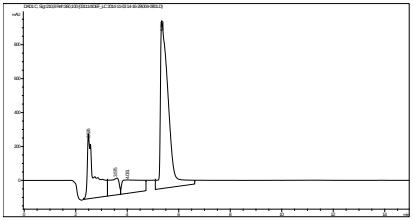


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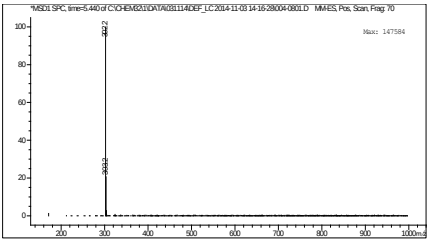
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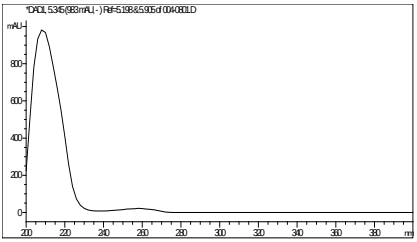
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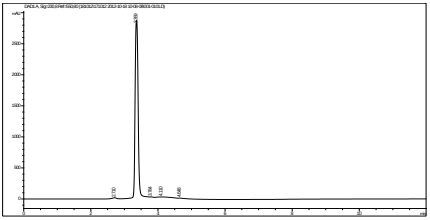


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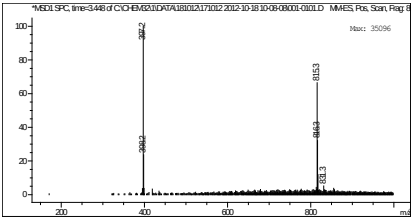


c

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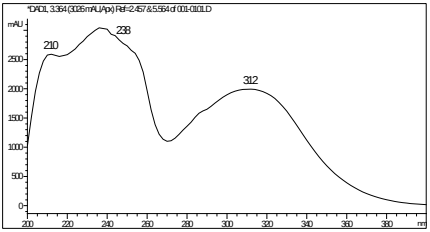


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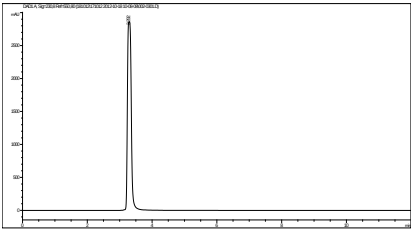


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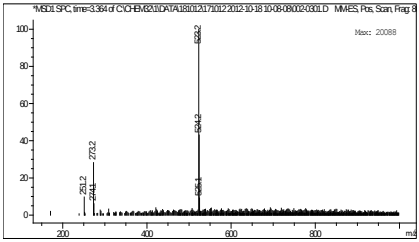
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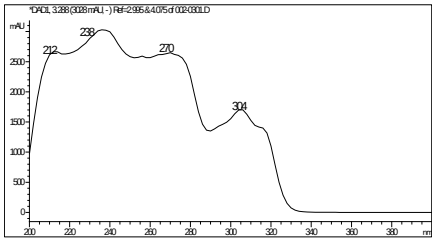
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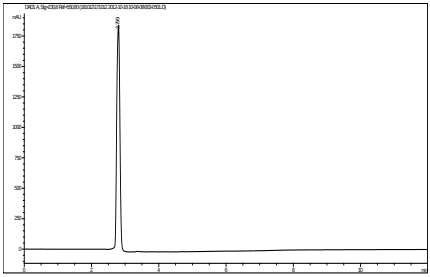


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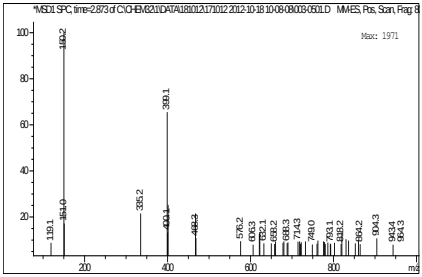


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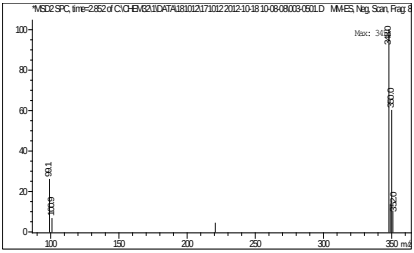
Methamphetamine



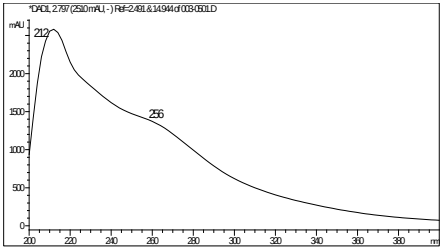
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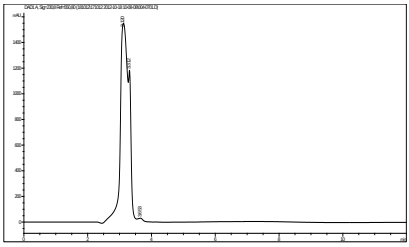


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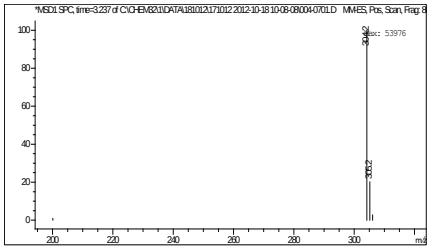


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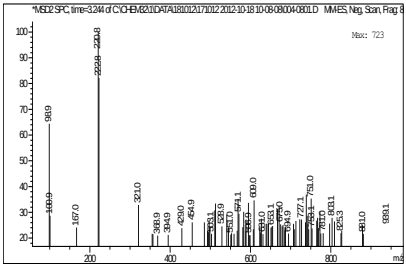
Cocaine



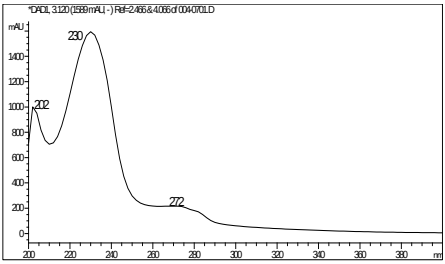
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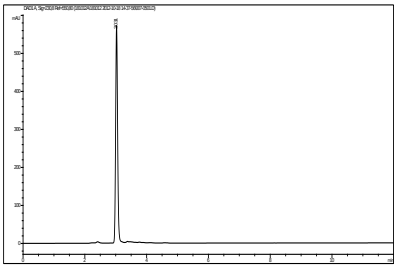


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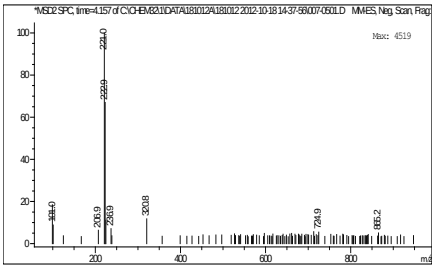


c

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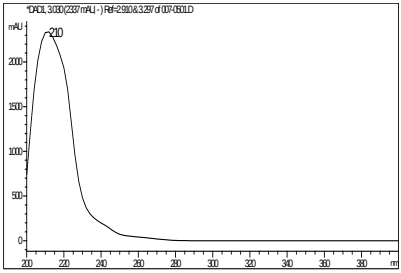


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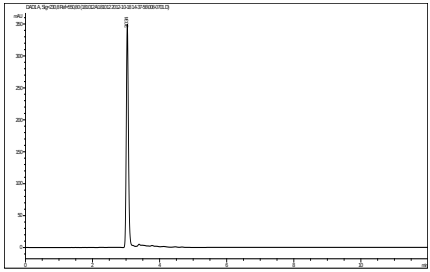


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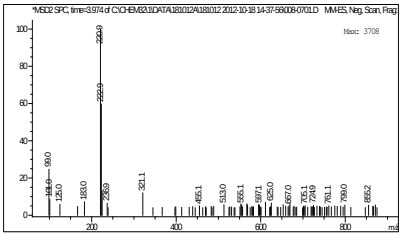
Barbital



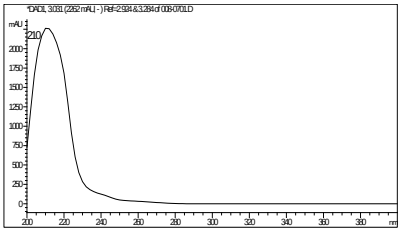
c



a



b



c

Fig. 1-25. chromatograms, mass spectra and UV spectra of the compounds studied

As a result of the analysis, it was found that in the study of most narcotic drugs (opium, heroin, morphine, fentanyl) and dosage forms containing as active substances: nitrazepam, bromazepam, clophelin, zolpidem, cyclodol and scopolamine, the use of positive ionization is the best mode at atmospheric pressure. In this case, the chromatograms obtained by the total ion current can accurately identify the peak corresponding to the analyzed substance.

When analyzing dosage forms containing nozepam and clonazepam, the best mode is the use of negative ionization at atmospheric pressure, which allows the analysis of the mass spectrum to reveal a deprotonated ion with the molecular weight of the substance itself with the simultaneous absence of fragmental fragment ions.

Thus, as a result of the research, it was found that the use of high-performance liquid chromatography with a mass spectrometry detector allows, based on data on retention time, molecular and fragmentation ions, their intensity, fragmentation individuality, maximums in the UV spectral region, to solve the classification and identification tasks on the establishment of nature, ancestral, group affiliation, a single source of origin and quantity of drugs, psi lyotropic agents and precursors.

As a result of the research, a technique has been developed for the expert study of microquantities of substances under international control using chromatography-mass spectrometry and high-performance liquid chromatography with a mass spectrometric detector. Established: retention time, molecular and fragmentation ions, their intensity, individuality of fragmentation of each substance, as well as the values of the maxima in the UV region of the spectrum of these compounds. These parameters are recommended for the detection of controlled substances in the composition of complex matrices, as well as the establishment of gender and group affiliation and their common source of origin. It is proved that these methods have high sensitivity, speed and ease of use.

ЕКСПЕРТНЕ ДОСЛІДЖЕННЯ МІКРОКІЛЬКОСТЕЙ НАРКОТИЧНИХ ЗАСОБІВ, ПСИХОТРОПНИХ РЕЧОВИН І ПРЕКУРСОРІВ

Н. Ш. Халілова, Н. В. Корабльова, В. А. Вєтрова, М. У. Абдуллаєва, З. У. Усмоналієва

При розслідуванні й судовому розгляді кримінальних справ, пов'язаних із незаконним обігом наркотичних засобів, психотропних речовин і прекурсорів, усе більше доказове значення набувають мікрооб'єкти, що виявляються на місці злочину, а також на предметах, пов'язаних із подією злочину та його учасниками. В експертній практиці як об'єкти дослідження часто виступають наркотичні

засоби й психотропні речовини, які вкрай рідко є індивідуальними з'єднаннями. При цьому найбільші складності виникають при дослідженні речовин, що являють собою багатокомпонентні системи й суміші, які містять значну кількість домішкових і баластових речовин, а також низькі концентрації активних речовин. Усе це утрудняє ідентифікацію речовини та стало підставою для розроблення методики з дослідження мікрокількостей наркотичних засобів, психотропних речовин і прекурсорів. Незважаючи на те, що хроматографічний аналіз є найпоширенішим методом аналізу наркотичних засобів, психотропних речовин і прекурсорів, останнім часом завдяки високій інформативності, чутливості й селективності у світовій практиці судово-хімічної й медичної експертизи все більше застосовуються методи газової хромато-масс-спектрометрии (ГХ-МС) і високоефективної рідинної хроматографії з мас-спектрометричним детектором (ВЕРХ-МС). Використання методу ВЕРХ-МС є найбільш оптимальним при дослідженні наркотичних засобів, психотропних речовин і прекурсорів завдяки скорочення часу пробопідготовки, оскільки відпадає необхідність стадії випарування реагентів і одержання похідних, а також з'являється можливість ідентифікувати нелетучі речовини, які неможливо аналізувати методом ГХ-МС. У результаті проведених досліджень розроблена методика криміналістичного дослідження мікрокількостей деяких наркотичних засобів (героїну, морфіну, опію, метамфетамину, кокаїну та ін.), психотропних речовин (клофеліну; бромазепаму, кетазоламу, циклодолу, метаквалону, барбіталу та ін.), прекурсорів (псевдоефедрину, ефедрину) і отруйної речовини — скополаміну за допомогою ГХ-МС і ВЕРХ-МС.

Ключові слова: контрольовані речовини, наркотичні засоби, опійні алкалоїди, хромато-мас-спектрометрія, високоефективна рідинна хроматографія з мас-спектрометричним детектором.

ЭКСПЕРТНОЕ ИССЛЕДОВАНИЕ МИКРОКОЛИЧЕСТВ НАРКОТИЧЕСКИХ СРЕДСТВ, ПСИХОТРОПНЫХ ВЕЩЕСТВ И ПРЕКУРСОРОВ

Н. Ш. Халилова, Н. В. Кораблева, В. А. Ветрова, М. У. Абдуллаева, З. У. Усмоналиева

Приведена методика криминалистического исследования микроколичеств некоторых наркотических средств, психотропных веществ, прекурсоров и ядовитого вещества — скополамина при помощи хромато-масс-спектрометрического анализа и высокоэффективной жидкостной хроматографии с масс-спектрометрическим детектором.

Ключевые слова: контролируемые вещества, наркотические средства, опийные алкалоиды, хромато-масс-спектрометрия, высокоэффективная жидкостная хроматография с масс-спектрометрическим детектором.

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VALIDATION OF GAS-CHROMATOGRAPHIC AND UV-SPECTROMETRIC METHODS FOR QUANTITATIVE DETERMINATION OF BUPRENORFINE IN ACCORDANCE WITH THE REQUIREMENTS OF ISO / IEC 17025: 2005

Results of quantitative calculation and construction of calibration curves for narcotic drugs containing buprenorphine are presented. The gas chromatography and UV spectrometry methods were validated in accordance with the requirements of the international standard ISO / IEC 17025: 2005 with the following parameters: feature (specificity), linearity, accuracy, stability and reproducibility. It has been shown that their practical implementation ensures reliable performance of the quantitative determination of buprenorphine.

Keywords: buprenorphine, calibration curves, method validation, narcotic drugs, gas chromatography, UV spectrometry, wavelength, optical density, linearity.

The Department of Physico-Technical and Chemical Studies of the National Bureau of Expertise of the Republic of Armenia, founded in 2004, with the aim of implementing the Armenian-American intergovernmental agreement on the control of illicit drug trafficking in the Republic of Armenia, has accumulated considerable experience in conducting expert studies of narcotic drugs (NA), psychotropic substances (PW), precursors (P), drugs (drugs), potent and toxic substances (SDYAV). At the same time, forensic

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investigations carried out within the framework of forensic examinations pursue the following essential tasks: detecting traces of NA, PV, P, PM, and SDNW at various carrier sites, establishing a common group of homogeneous raw materials, processing technology, storage conditions, etc., the identification of specific masses of the listed chemical compounds by parts from them, etc.

Recently, when performing forensic investigations, cases of submission for expert examination of narcotic drugs containing the component buprenorphine, having the gross formula C29H41NO4 and the systematic name 5–alpha, 7–alpha (S)–17–(cyclopropylmethyl) alpha–(1,1–imethylethy l–4,5–epoxy–18, 19–dihydro-3–hydroxy–6–methoxy–alpha–methyl–6, 14–etenmorphine–7–methanol. When conducting quantitative calculations of detected drugs in the studied objects presented on expertise for more accurate and reliable data In particular, for buprenorphine, which is a partial agonist of opioid receptors and has analgesic properties, studies have been performed that have made it possible to validate the gas chromatographic and UV spectrometric methods for the quantitative determination of buprenorphine[1].

Experimental studies in the performance of research work also used: standard buprenorphine hydrochloride (Batch: 3858–0292–30 (B) (Reckitt and Coleman), methyl stearate (SIGMA-ALDRICH; CAS 112–61-8), methanol (SIGMA-ALDRICH; CAS 67–56–1), ethanol (SIGMA-ALDRICH; CAS 64–17–5), chloroform (SIGMA-ALDRICH; CAS 67–66–3), hydrochloric acid (SIGMA-ALDRICH; CAS 7647–01-0), double distilled water (bidistillate).

Quantitative determination of buprenorphine by gas chromatography. The studies were performed using a gas chromatograph model HP-6890 under the following conditions: detector — flame ionization; column — glass, capillary, 10 m; liquid phase — siloxane; the carrier gas is hydrogen; evaporator temperature — 250 ° C; detector temperature — 250 ° C; chamber temperature is 75–280 ° C (25 ° C / s). An ethanol or methanol solution of methyl stearate with a concentration of 1 mg / ml was used as an internal standard:

For the quantitative determination of buprenorphine and the subsequent construction of calibration curves, shots were made into the gas chromatograph injector of previously prepared, concentrated working

[1] Mashkovskyi M. D. (2010) *Lekarstvennye sredstva* [Medicines]. 15th ed. Moscow : Novaya volna, 1206 p.; Validation of Analytical Procedures: Guide to Good Manufacturing Practise for Medical Products. Part 2. PIC/S, January 2013. 50 p. [in Russian]; Tovmasyan A. G. Gharajyan K. S. Diazepam, lorazepam and buprenorphine-containing objects' validation method in accordance with ISO/IEC 17025:2005 standard requirements to materiological expertise of the objects: scientific report in Proceedings Chemical and Environmental Technologies Journal. Vol. 90. No 2. 2017, p. 24–30

solutions in a volume of 1 μl. For each concentration, 3–4 vcol indicated the following were made: BUPR 1 / 1.D, BUPR 1 / 2.D and BUPR 1 / 3.D[1].

The research results are summarized in table 1.

Table 1

Results of a gas chromatographic study of buprenorphine

Name Sample	Time Retention, min	Concentration solutions, mg / m	Peak area, pA·s
BUPR1/1.D	10.721	10	4227.3
BUPR1/2.D	10.7	10	3359.3
BUPR1/3.D	10.713	10	3660.7
BUPR2/1.D	10.683	5	1906.6
BUPR2/2.D	10.687	5	1947.7
BUPR2/3.D	10.679	5	1841.6
BUPR3/1.D	10.645	2.5	1115.7
BUPR3/2.D	10.642	2.5	848.3
BUPR3/3.D	10.656	2.5	766.6
BUPR3/4.D	10.664	2.5	932.5
BUPR4/1.D	10.643	1.25	493.5
BUPR4/2.D	10.641	1.25	391.1
BUPR4/3.D	10.646	1.25	355.8
BUPR4/4.D	10.649	1.25	354.3
BUPR5/1.D	10.648	0.625	168.2
BUPR5/2.D	10.648	0.625	171.9
BUPR5/3.D	10.655	0.625	172.7
BUPR5/4.D	10.651	0.625	172.2

The buprenorphine concentrations were rechecked at least three times, and the calculated peak areas were averaged. The table 1 shows the calibration dependence of the peak area on the concentration of the object under study.

The obtained linear dependence ($y = kx$) allows calculating the coefficient k, which is used later in the calculation of the measurement uncertainty value. Thus, the processing of the constructed calibration curve made it possible to calculate the coefficient k for buprenorphine, which amounted to 374.4.

Thus, when quantifying the experimental values of the tablets under study, liquids that contain buprenorphine, when conducting expert studies, it

[1] Guidelines on Sampling of Illicit Drugs for Quantitative Analysis, ENFSI Drugs Working Group. Ref. Code: DWG-GQS-002, April 14th, 2014; Guide for Pharmaceutical Industry (Method Recommendation). Parts I-III. Moscow : Sports and Culture — 2000, 2007; Agilent Technologies 6890, Gas Chromatograph, Control. 03–914947–32: Rev. 10.

is proposed to be guided by the following methodology: a corresponding aliquot of the sample is taken from the tablets under study, and in the study of liquids, 1 ml with drying to a stable dry residue. From the selected samples using chemically pure solvents (methanol, ethanol, chloroform, hexane, etc.), extracts are prepared in a volume of 1 ml, to which then an equal amount of methanolic methyl stearate with concentrations of 1 mg / ml is added. Following this, each sample is subjected to a threefold gas-chromatographic analysis, and the resulting average values of peak areas are divided into the previously calculated values of the coefficients *k*. Thus, the calculated values are the concentrations of the considered components contained in the experimental samples under study, the masses of which were previously known. At the final stage, the concentration is calculated for the initially studied object as a whole. The resulting concentration corresponds to the number of the investigated object in grams.

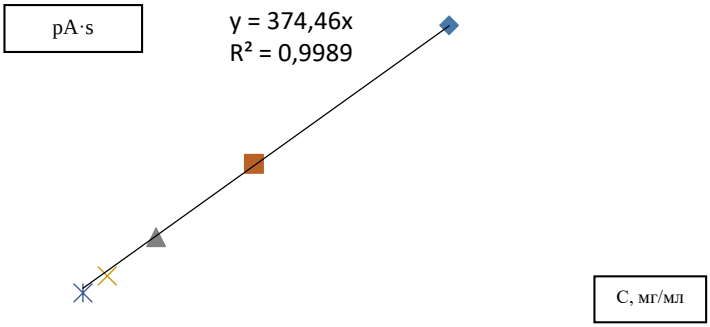


Fig. 1. Calibration curve for buprenorphine

The validation procedure of the developed method was performed in accordance with the following parameters: specificity (Specificity), linearity (Linearity), accuracy (Accuracy), stability (Repeatability) and reproducibility (Intermediate precision).

1. The specificity (specificity) indicates that the studied component of buprenorphine has a certain retention time (Retention times), and these values differ from the retention times of solvent components and other substances (Table 1)[1].

[1] Eremyn S. K., Yzotov B. N., Veselovskaia N. V. Opere citato.; Validation of Analytical Procedures: Guide to Good Manufacturing Practise for Medical Products. Part 2. PIC/S, January 2013. 50 p.; Agilent Technologies 6890, Gas Chromatograph, Control. 03–914947–32: Rev. 10.

2. Linearity shows that the areas of the corresponding peaks generated by the inoculation of working standard solutions are linearly dependent on the concentration of these solutions. The studies were carried out using five concentrations of working standard solutions. Note that the correlation is assumed to be linear with coefficient $r^2 \geq 0{,}99$. In the study of five concentrations of buprenorphine, the correlation coefficient $r^2 = 0{,}9950$ (Fig. 1)[1].

3. Accuracy shows that the developed method correctly determines the concentration of the investigated solutions. Studies were conducted for three standard solutions of three different concentrations with a triple repetition of injections for each concentration, followed by the derivation of the arithmetic average of the values obtained[2].

4. Stability shows that the chromatographic system is stable, and with repeated studies of the same sample, reproducibility of results was achieved.

5. Reproducibility shows that reproducibility of measurements is ensured when conducting research on the next day or studies performed by another expert.

To confirm the reliability of quantitative determinations, the following studies were performed. A test of the working standard buprenorphine solution of three different concentrations was carried out sequentially. Three times gas chromatographic studies were performed with each of the prepared samples to obtain all the five parameters listed. The obtained research results and calculations made it possible to carry out quantitative calculations (definitions) of the corresponding components in the test samples submitted for examination based on the described method using the obtained measurement uncertainty values in accordance with the requirements of the international standard ISO / IEC 17025: 2005.

Quantitative determination of buprenorphine by UV spectrometry. UV spectrometry is a simple and quick method for the quantitative analysis of chemical compounds. UV spectroscopy can be applied to any controlled substance in the presence of standard samples and in the absence of interfering components. As a rule, the determination of the analyte will not interfere with one or another component if the difference between the wavelengths at which the maximum absorption of the analyzed substances is observed is not less than 20 nm[3]. Quantitative determination of chemical compounds, as a rule, is carried out in accordance with the law of the Bouguer-Lambert-Beer[4].

The studies were performed using an Agilent Cary 60 spectrometer in the wavelength range from 800 to 200 nm on the full spectrum using a quartz cell and an absorbent layer thickness of 10 ml (Part-№ 6610000800, Quartz Cell

[1] Ibidem.
[2] Ibidem.
[3] Bushuev E. S. Babakhanian R. V. Soloveva T. L. Opere citato.
[4] Petrukhyn O. M. (ed.) Practicum on physicochemical methods of analysis. Moscow, 1987. P. 56.

10mm, 3500 μl 2 / p). Note that using the Agilent Cary 60 model spectrometer, you can quickly and with high accuracy perform a qualitative and quantitative analysis of the buprenorphine contained in the test objects without using expensive reagents.

For the quantitative determination and construction of calibration curves for buprenorphine, the UV spectra of previously prepared, concentrated working aqueous solutions (acidified with 2–3 drops of 0.1 N hydrochloric acid solution) were recorded at the maximum absorption value of buprenorphine corresponding to λmax = 288 nm.

The following buprenorphine concentrations were measured: 0.016, 0.035, 0.08, 0.12, 0.16 mg/ml. The obtained values of optical density at λmax = 288 nm are given in Table 2

Table 2

Results of the UV spectrometry of buprenorphine

Concentration [C], g / ml	Optical density [D]
0	0
0.016	0.122
0.035	0.218
0.08	0.422
0.12	0.641
0.16	0.891

Based on the results obtained, a buprenorphine calibration curve was constructed (Fig. 2).

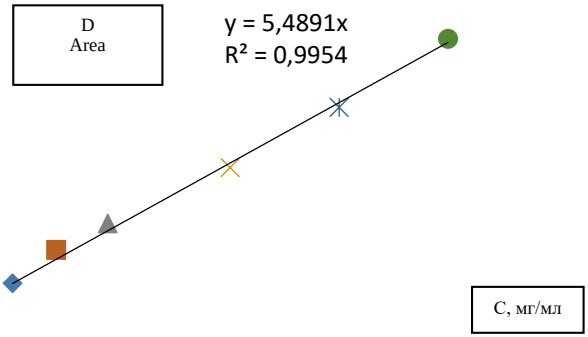


Fig. 2. Calibration curve of buprenorphine acidified with 0.1 N hydrochloric acid solution

The resulting linear relationship ($y = kx$) allowed us to calculate the coefficient k for buprenorphine, which amounted to 5.489.

The research results provide the ability to conduct quantitative determinations of buprenorphine using UV spectrophotometric analysis method.

Based on the presented experimental results and the validation procedures carried out, two methods of analysis were introduced into the forensic practice department: gas chromatographic and UV spectrophotometric, which ensure reliable quantitative determination of buprenorphine in accordance with the requirements of the international standard ISO / IEC 17025: 2005.

ВАЛІДАЦІЯ ГАЗО-ХРОМАТОГРАФІЧНОГО ТА УФ-СПЕКТРОМЕТРИЧНОГО МЕТОДІВ КІЛЬКІСНОГО ВИЗНАЧЕННЯ БУПРЕНОРФІНУ ВІДПОВІДНО ДО ВИМОГ СТАНДАРТУ ІСО/МЕК 17025:2005

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Розглянута валідація газо-хроматографічного й УФ-спектрометричного методів кількісного визначення бупренорфіну, що є частковим агоністом опіоідних рецепторів і володіє знеболюючими властивостями, відповідно до вимог стандарту ІСО/МЕК 17025:2005. Звернена увага на те, що при проведенні кількісних розрахунків виявлених наркотичних засобів, психотропних речовин, прекурсорів, лікарських засобів, сильнодіючих і отруйних речовин у досліджуваних об'єктах, наданих на експертизу, для отримання більш точних і достовірних даних, виникає необхідність їх достовірного кількісного визначення відповідно до вимог стандарту ІСО/МЕК 17025:2005. Як приклад наведено результати кількісного розрахунку і побудови калібрувальних кривих наркотичних засобів, що містять бупренорфін. Проведена валідація методів газової хроматографії й УФ-спектрометрії відповідно до вимог міжнародного стандарту ІСО/МЕК 17025:2005. Валідація розроблених методів виконана згідно з наступними параметрами: особливість (специфічність), лінійність, точність, стабільність і відтворюваність. Наведено калібрувальні залежності, показана їх лінійність, що дозволяє розрахувати коефіцієнт k, використовуваний надалі при обчисленні значення невизначеності вимірів. Отримані результати досліджень і розрахунки по них дозволили виконувати кількісні розрахунки (визначення) відповідних компонентів у досліджуваних зразках, що надаються на експертизу, на основі розробленої у відділі фізико-технічних і хімічних досліджень Національного бюро експертиз Республіки Вірменія методології, з використанням отриманих значень невизначеності вимірів відповідно до вимог міжнародного стандарту ІСО/МЕК 17025:2005. Показано, що практична їх реалізація забезпечує достовірне виконання кількісного визначення бупренорфіну. Таким чином, відштовхуючись від експериментальних результатів і проведених процедур валідації, у судово-експертну практику відділу впроваджено два методи аналізу: газо-хроматографічний і УФ-спектрофотометричний, що забезпечують відповідно до вимог міжнародного стандарту ІСО/МЕК 17025:2005 достовірне виконання кількісного визначення бупренорфіну.

Ключові слова: бупренорфін, калібрувальні криві, валідація методу, наркотичні засоби, газова хроматографія, УФ-спектрометрія, довжина хвилі, оптична щільність, лінійність.

ВАЛИДАЦИЯ ГАЗО-ХРОМАТОГРАФИЧЕСКОГО И УФ-СПЕКТРОМЕТРИЧЕСКОГО МЕТОДОВ КОЛИЧЕСТВЕННОГО ОПРЕДЕЛЕНИЯ БУПРЕНОРФИНА В СООТВЕТСТВИИ С ТРЕБОВАНИЯМИ СТАНДАРТА ИСО/МЭК 17025:2005

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Приведены результаты количественного расчета и построения калибровочных кривых наркотических средств, содержащих бупренорфин. Выполнена валидация методов газовой хроматографии и УФ-спектрометрии в соответствии с требованиями международного стандарта ИСО/МЭК 17025:2005 со следующими параметрами: особенность (специфичность), линейность, точность, стабильность и воспроизводимость. Показано, что практическая их реализация обеспечивает достоверное выполнение количественного определения бупренорфина.

Ключевые слова: бупренорфин, калибровочные кривые, валидация метода, наркотические средства, газовая хроматография, УФ-спектрометрия, длина волны, оптическая плотность, линейность.

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ABOUT APPLICATION POSSIBILITY OF POLLEN AND SPORE ANALYSIS FOR IDENTIFYING PLANT MATRIX OF "SPACE", FOR A SINGLE SOURCE OF ORIGIN

Results of researches on inactive matrices of plant origin used for the impregnation of psychoactive substances by the method of spore-pollen analysis are presented. A number of qualitative and quantitative indicators have been identified that can be used as evidence of the belonging of the studied plant objects to a single source of origin.

Keywords: plant matrices, pollen and spore analysis taxonomic composition, quantitative indices, complex of identification characteristics, evidentiary value.

An urgent task in the system of measures to ensure the counteraction to illicit drug trafficking and the spread of drug addiction is the development and application of new research methods that will expand the possibilities of forensic examination, increase its reliability and validity[1].

While the investigation of cases involving the distribution and use of narcotic drugs, including "spikes", there is a need for research on vegetable plants, which are often small vegetative and (or) generative parts of plants. One of the methods that can be successfully used to solve the problem of

[1] Rengert G. F. The geography of illegal drugs. Routledge, 2018. 45 p.; Paoli L. What is the link between organized crime and drug trafficking? Rausch-Wiener Zeitschrift für Suchttherapie. 2017. V. 6. № 4. P. 181–189 [in Ukrainian]

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establishing the affiliation of several objects to a single source of origin is the method of spore-pollen analysis, which allows us to estimate both the taxonomic composition of pollen and spores and the percentage content of the numerous components of the spore-pollen spectra contained in the specimens vegetable raw materials.

In recent years, an increasing number of publications on the results of work aimed at the study by the method of spore-pollen analysis of various objects containing on their surface pollen and plant spores, including work on the establishment of regional affiliation of objects, diagnostics of the geographical area in which the object, determine the time (season) of the object in a particular area, to establish a single source of origin of objects, etc.

One of the main tasks, the solution of which was envisaged by the task *Development of new approaches to the study of vegetable objects in the conduct of forensic research*, carried out in the State Scientific and Practical Center of the State Committee of Forensic Expertise of the Republic of Belarus under the GPNI *Computer Science, Space and Security*, in 2016–2017, was the study of inactive vegetation matrices used for impregnation of psychoactive substances by the method of spore-pollen analysis.

The purpose of the research was to study the possibility of applying the method of spore-pollen analysis to prove the belonging of a series of samples of crushed plant material to a single source of origin. To achieve the goal, the following tasks had to be solved: Determine whether there is a small amount of plant material in pollen and plant spores in an amount sufficient to calculate the reliable percentage content of individual taxa; Perform spore-pollen analysis of vegetative raw materials of several series of samples: a) belonging to one party; b) from lots of different manufacturers; c) belonging to different parties of the same manufacturer; to reveal indicators testifying to the belonging of comparable series of samples to single or different sources of origin.

Materials for research were dried and crushed raw materials of various herbs: The research material was dried and crushed raw materials of various herbs: the sequence (Herba Bidentis), Hypericum (Herba Hyperici), sage leaves (Salviae Folia), leaves of coltsfoot (Tussilaginis farfarae folia), chamomile flowers (Matricariae flores) and collection vegetable “Stomaran”. For the spore-pollen analysis, 5 batches of 1.2–1.5 g were taken from each batch. From each specimen a large amount of pollen grains was selected, sufficient for reliable calculation of their percentage for each taxon, and a representative complex of pollen of various taxonomic composition, which was formed as a result of sedimentation and preservation of pollen on the vegetative and generative parts of the studied plant.

Counting pollen grains and calculating the percentage of individual groups and taxa. To obtain reliable research results, the maximum

identification of the entire spore-pollen complex contained in the sample and its subsequent detailed analysis are necessary. In the event that a preview of the drug showed that the absolute majority of pollen grains belong to one plant and forms a "background", in the preparation, and pollen from other taxa is rare (as, for example, when studying drugs of pollen isolated from crushed plants of the train or hypericum) then first all pollen grains found (not less than 300 specimens) were determined and counted in succession, and the percentage ratio of the main (background) taxon pollen from all other taxa was calculated. Then pollen counts continued only for "other taxa", to its total amount of 300 or more specimens. From the amount of pollen from other taxa, the percentage of the following groups was first calculated: pollen of tree and shrub species, grass pollen and shrubs, and spores. Then, from the total amount of pollen of all other taxa, its percentage was calculated for each individual taxon.

If a preview of the drug showed that it lacked the absolute dominance of pollen grains of any taxon, then in the preparation all the pollen and spores encountered were counted up to a total of 300 or more specimens. From the sum obtained, the percentage of the three groups mentioned and the percentage of each taxon were calculated.

All data on the taxonomic composition of pollen and spores, their number and percentage were entered in the table, and a spore-pollen diagram was based on them.

The results of the spore-pollen analysis of crushed plant materials for a series of samples belonging to the same batch. To answer the question of which features of the composition of the spore-pollen spectra of the studied grass samples prove their belonging to a single plant mass, a comparison was made of the results of the spore-pollen analysis obtained for every five samples taken from crushed grass raw material (Herba Bidentis), herbs of Hypericum (Herba Hyperici), herbs (leaves) of sage (Salviae Folia), herbs (leaves) of coltsfoot (Tussilaginis farfarae folia), chamomile flowers (Matricariae flores), plant collection "Stomaran"[1].

As can be seen from the diagram (Fig. 1), based on the results of studies of 5 samples of grass series taken from the same batch, all samples contain a large amount of pollen belonging mainly to grassy plants. At the same time there is a similarity of the compared samples for a number of indicators:

[1] Rylova T. B. (2016) *O vozmozhnosti ispol'zovanija sporovo-pyl'cevogo analiza v jekspertnyh issledovanijah ob"ektov rastitel'nogo proishozhdenija. Voprosy kriminologii, kriminalistiki i sudebnoj jekspertizy : sb. nauch. tr*. [On the possibility of using spore-pollen analysis in expert studies of vegetable objects. Questions of Criminology, Criminalistics and Forensic Science: Collection of scientific papers]. Minsk : Law and economics, Issue 2/40, p. 121–126 [in Ukrainian].

1. The absolute majority of pollen grains belong to the plant under study — the string (Bidens) and creates a “background”, among which pollen of other taxa is found.

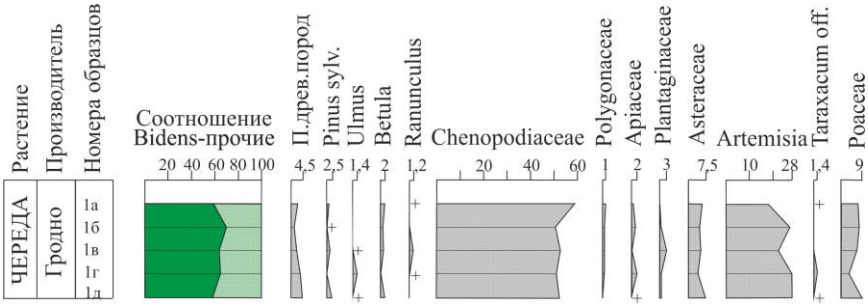


Fig. 1. The percentage of pollen of the most important plant taxa contained in the crushed raw material “grass series” (Bidentis Herba)

2. The percentage of pollen of the main taxon — the sequence (Bidens) varies within 59–70 %, and the total content of other taxa varies, respectively, from 30 to 41 %.

3. Comparison of the percentage of pollen of the main groups of plants showed that tree pollen is 1.5–4.5 %, herbaceous plants — 95.5–98.5 %, and spores are absent.

4. Analysis of the taxonomic composition of tree pollen revealed the presence of common pine pollen (*Pinus sylvestris*) in all 5 samples. In 4 samples, fluffy and warty birch pollen (Betula pubescens, Betula pendula) was observed, in 3 samples — elm (Ulmus sp.). Pollen of other taxa was found only in 1–2 samples.

Analysis of the taxonomic composition of herbaceous pollen has shown that in all 5 samples pollen of marijuana (*Chenopodiaceae gen.*), Wormwood (*Artemisia sp.*), Asteroids (*Asteraceae gen.*) And cereals (*Poaceae gen.*) Are represented, in 4 samples — buckwheat (*Polygonaceae gen.*), celery (*Apiaceae gen.)*, plantain (*Plantago lanceolata*), 3 — buttercup (*Ranunculus sp.*) and dandelion (*Taraxacum officinale*). Pollen grains of other taxa are noted in 1–2 samples.5.

5. Dominant taxa (3 % or more) in the group of “other taxa”, are hawks (*Chenopodiaceae gen.*), Wormwood (*Artemisia sp.*), Cereals (P*oaceae gen.*) And aster (*Asteraceae gen.*). Among the pollen of tree species, the dominant taxa are absent.

6. Comparison of the percentage of pollen from the dominant taxa suggests that their percentages vary within relatively close limits: haul pollen (Chenopodiaceae gen.) — 52–60 %, wormwood (Artemisia sp.) — 18–28 %,

aster (Asteraceae gen.) — 4–7.5 %, cereals (Poaceae gen.) — 3.5–9 %, plantain lanceolate (Plantago lanceolata) — 0.6–3 %.

7. Comparison of the taxonomic composition and the percentage of plant pollen contained in an amount of less than 3 %, but present in at least three samples of 5, showed that pollen pine (Pinus sylvestris) — 0.5–2 5 %, birch (Betula pubescens, B. rendula) — 0.5–2 and elm (Ulmus sp.) — 0.6–1.4 %, and from grass pollen — buttercup (Ranunculus sp.) — 0, 5–1.2 %, buckwheat (Polygonaceae gen.) — 0.6–1 %, celery (Apiaceae gen.) — 0.6–2 % and dandelion (Taraxacum officinale) — 0.5–1.4 %

8. Comparison of the number of taxa identified in each of the 5 samples (taxa represented in less than three samples were not taken into account) revealed an insignificant difference between the compared samples in terms of the number of specific families and genera.

Similar results were also obtained from spore-pollen analysis of the herb of Hypericum (Herba Hyperici), sage leaves (Salviae Folia), coltsfoot leaves (Tussilaginis farfarae folia), chamomile flowers (Matricariae flores), and the collection of the plant "Stormaran".

A study of samples of plant materials belonging to the same batch showed that the samples studied had an almost identical set of features characteristic of this batch of plant materials. The conclusion that the plants presented for the study belong to a single source of origin can be made on the basis of the qualitative (taxonomic composition) and quantitative (percentage) estimates of the compared spore-pollen spectra, that is, on the basis of:

— establish the presence of the same main taxon, creating a "background", in the preparation (if there was one in the compared objects);

— establishing a similar percentage of pollen of the main taxon, creating a "background" (if there was one in the compared objects) and the amount of pollen from other taxa;

— identify the same dominant (3 % or more) taxa in each group;

— establishing a similar percentage of pollen from the dominant taxa among tree pollen, herbaceous plants and spores;

— establish a similar percentage of the three main groups (tree pollen, herbaceous plants and spores) in the total composition of the spectra;

— identifying a similar taxonomic composition of tree pollen, herbaceous plants, spores, noted in less than 3 % (taxa are present in most of the samples studied in each of the compared objects);

— establish a similar number of specific taxa (taxa are present in most of the samples studied in each of the objects being compared) with a significant number of common taxa (counting the number of taxa is not always an indicator of belonging to a single plant mass. The number of common taxa in the compared ones is more informative samples).

The results of the spore-pollen analysis of crushed plant materials for a series of samples from batches of different manufacturers. The next stage of research was to perform a spore-pollen analysis of plant raw materials of one plant species by a series of samples from batches of different manufacturers and the subsequent comparison of the corresponding spore-pollen spectra to reveal signs allowing to prove the belonging of the compared sample series to different sources of origin.

For example, consider the results of spore-pollen analysis of samples of plant raw materials “Salvia leaves” (Salvia Folia), taken from batches 1 (manufacturer — LLC “PADIS'S”, Minsk, Republic of Belarus) and 2 (NPK “BIOTEST”, Grodno, Republic of Belarus). The corresponding spore-pollen diagrams are presented on fig. 2

It should be noted that the spore-pollen analysis of these samples revealed such a feature as a very small amount in the preparations of pollen belonging to the sage itself. Its absence can be explained by the time of collecting sage leaves before it starts flowering. In connection with this circumstance, the calculation of the percentage of individual groups of pollen and spores, as well as of each of the specific taxa, was performed from the total number of pollen grains, counted and determined in each sample.

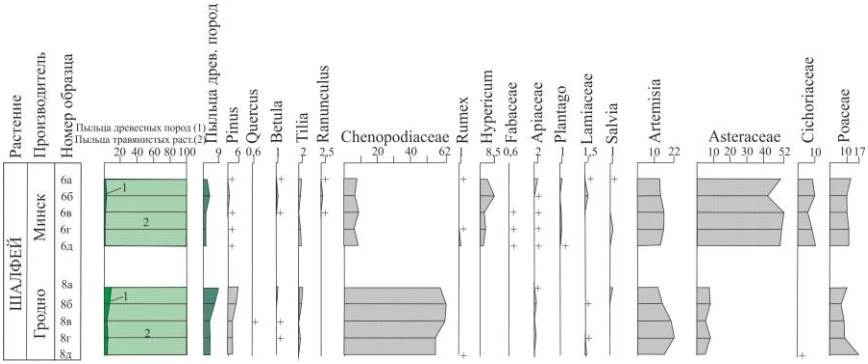


Fig. 2. The percentage of pollen of the most important taxa of plants contained in the crushed raw materials “sage leaves” (Salviae Folia) from batches 1 (manufacturer — LLC PADIS'S, Minsk) and 2 (NPK “BIOTEST”, Grodno)

Comparison of the percentage of pollen from the main groups of plants showed that tree pollen in samples of batch 1 is 1.5–3.5 %, and in samples from batch 2 it is 3.5–9 %. The pollen of herbaceous plants in samples of batch 1 is 96.5–98.5 %, in batch 2, 91–96.5 %.

Comparison of the taxonomic composition of tree species showed that the samples of both batches represented the same taxa: European spruce

(*Picea abies*), Scotch pine (*Pinus sylvestris*), warty birch (*Betula pendula*), heart-shaped linden (*Tilia cordata*), euonymus (*Eonymus sp.*).

The difference between batches 1 and 2 is the presence of pedunculate oak pollen (*Quercus robur*) only in batch 2.

If we do not take into account the pollen of taxa, which are found only in 1–2 samples, then both batches will not differ in the taxonomic composition of tree species.

Comparison of the taxonomic composition of herbaceous pollen revealed the presence in samples of both batches of haze (*Chenopodiaceae gen.*), Buckwheat (*Polygonaceae gen.*), Common sorrel (*Rumex acetosa*), celery (Apiaceae gen.), Plantain (Plantago sp.), Lamiaceae plants (*Lamiaceae gen.*), Sage (*Salvia sp.*), Centaurea (*Asteraceae gen.*), Including wormwood (*Artemisia sp.*) And blue cornflower (*Centaurea cyanus*), chicory (*Cichoriaceae gen.*), Namely, dandelion medicinal (Taraxacum officinale), cereals (*Poaceae gen.*), rogaceous (*Typhaceae gen.*).

The differences between the batches are the following: only in batch 1 is represented the pollen of buttercup (*Ranunculus sp.*), Clove (*Caryophyllaceae gen.*), Moth pickler (*Polygonum persicarya*), tricolor violets (Viola tricolor), Hypericum (*Hypericum sp.*), Cabbage (*Brassicaceae gen.*), Rosaceae (Rosaceae gen.), legumes (*Fabaceae gen.*), common hops (*Humulus lupulus*), sedges (*Cyperaceae gen.*), Typha angustifolia. Only in batch 2 is present nettle pollen (*Urtica sp.*), Highlander bird (*Polygonum aviculare*), broad left cattail (*Typha latifolia*).

If you do not take into account the pollen of taxa that are marked in 1-2 samples, then both batches will be distinguished by the presence of pollen of common sorrel (*Rumex acetosa*), Hypericum (*Hypericum sp.*), Legumes (*Fabaceae gen.*), Plantains (*Plantaginaceae gen.*), dandelion officinalis (*Taraxacum officinale*) only in lot 1.

Dominating taxa (3 % or more) among tree pollen are absent in batch 1, and in batch 2 such a taxon is Scotch pine (*Pinus sylvestris*).

Among the pollens of herbaceous plants, the dominant taxa in the samples of batch 1 are aster (*Asteraceae gen.*), Wormwood (*Artemisia sp.*), Cereals (*Poaceae gen.*), Chicoryae (*Cichoriaceae gen.*), Wild (*Chenopodiace gen.*), And St. John's Wort (*Hypericum sp.*). In samples of batch 2, the dominant taxa include the marry (*Chenopodiaceae gen.*), The wormwood (*Artemisia sp.*), The cereals (*Poaceae gen.*), And the Asteras (*Asteraceae gen.*).

Comparison of the number of taxa of tree species and shrubs, as well as herbaceous plants and spores found in samples of crushed plant raw materials “Sage leaves” (*Salvia Folia*), taken from batches 1 and 2, showed that compared samples of two series of crushed raw materials “Sage leaves” (*Salvia folia*) differ in the number of specific families, genera and species.

Comparison of the percentage of tree pollen. In samples of batch 1, common pine pollen (*Pinus sylvestris*) is 0.3–1.5 %, wart birch (*Betula pendula*) — 0.3–1 %, heart-shaped linden (*Tilia cordata*) — 1–1.5 %, single European spruce (*Picea abies*) and Euonymus (*Eonymus sp.*) are marked.

In batch 2 samples, the percentage of common pine pollen (Pinus sylvestris) is 3–6 %, wart birch (Betula pendula) — 0.5–1 %, heart-shaped linden (*Tili acordata*) — 1–2 %, and euonymus (Eonymus sp.) — 1 %, spruce pollen of European (*Picea abies*) is represented individually.

Comparison of the percentage of grass pollen in batches 1 and 2 indicates noticeable differences:

— Aster pollen (*Asteraceae gen*.), Abundantly represented in samples of batch 1 (42.5–52.5 %), is much less frequently observed in samples of batch 2 (5–8 %);

— pollen of wormwood (*Artemisia sp*.) In samples of batch 1 is 13.5–16 %, in batch 2 –12–22 %;

— cereal pollen (*Poaceaeg en*.) In samples of batch 1 is 10–12 %, in batch 2 –6.5–10 (in one sample –17 %);

— chicory pollen (*Cichoriaceae gen*.), Namely, dandelion medicinal — Taraxacum officinale) in samples of batch 1 is 6–10.5 %, in batch 2 — 1 pollen grain is noted;

— pollen making (Chenopodiaceae gen.) In samples of batch 1 — 6–9 %, in batch 2 its amount is significantly higher — 55–62 %;

— Hypericum pollen (Hypericum sp.) In samples of batch 1 is 2–8.5 %, in batch 2 this pollen is absent;

The percentage of pollen from other taxa in both batches is small, and the differences are not so significant.

Similar studies of a series of samples of grass series (Herba Bidentis), Hypericum (Herba Hyperici) and leaves of coltsfoot (Tussilaginis farfarae folia) produced the same clear differences between batches of different manufacturers.

Thus, a spore-pollen analysis of plant materials belonging to batches produced by different manufacturers showed that the studied samples of each batch have clear differences in a number of indicators that can be used in expert practice to decide whether the compared series of samples belong to a single or different source of origin.

The results of the spore-pollen analysis of crushed plant materials for a series of samples from different batches of the same manufacturer. In order to study the possibility of using spore-pollen analysis to establish differences between different batches of plant raw materials of the same manufacturer, the crushed plant raw materials of several herbs were studied by the method of spore-pollen analysis. For example, a comparison is made of the results of a spore-pollen analysis of samples of plant raw material Hyperici Herba

(Hyperici Herba), taken from batches 1 and 2, produced by PADIS'S LLC, Minsk, Republic of Belarus. In fig. Figure 3 shows the corresponding spore-pollen diagram showing the percentage of pollen from the most important taxa in batch 1 (sample 4a — 4d) and 2 (sample 20a — 20d).

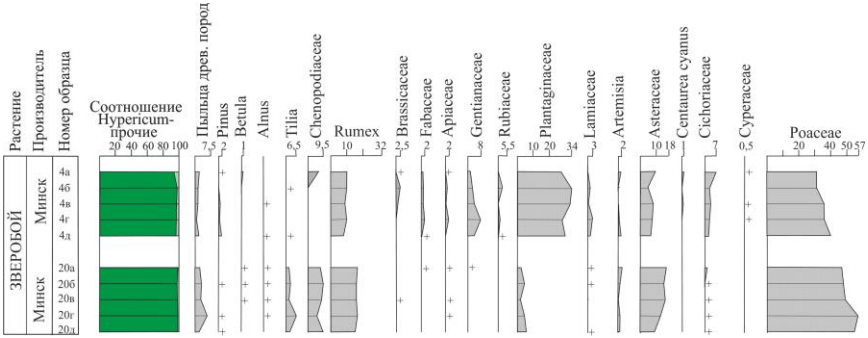


Fig. 3. The percentage of pollen of the most important plant taxa contained in the crushed raw material "Hyperici Herba" (PADIS'S LLC, Minsk, batches 1 and 2)

Comparison of the results of spore-pollen analysis of samples from both batches proved that in the samples of both batches the absolute majority of pollen grains belong to hunter (*Hypericum sp.*). This pollen forms a "background", in the preparation; pollen of other taxa is rarely found.

Comparison of the taxonomic composition of tree pollen showed that in both batches pollen of pine (Pinus sylvestris), burgundy birch (Betula pendula), fluffy birch (*Betula pubescens*), and black alder (*Alnus glutinosa*), heart-shaped lime (*Tilia cordata*) is present. Detected differences: only Part 1 saw the pollen of Picea abies, Quercus robber, Maple (*Acer sp.*), Viburnum lantana, Willows (*Salix sp.*), Crocus of alfalfa (*Frangula alnus*) and shoots (*Eonymus sp.*), and the pollen of the knit (*Ulmus sp.*) is noted only in lot 2.

If we do not take into account the pollen of taxa, which are found only in 1–2 samples, then both batches will not differ in the taxonomic composition of tree pollen.

Comparison of the taxonomic composition of herbaceous pollen suggests that the samples of both batches contain buttercup pollen (*Ranunculus sp.*), Clove (Caryophyllaceae gen.), Maturing (Chenopodiaceae gen.), Buckwheat (*Polygonaceae gen.*), And violet (*Violaceae gen.*).), cabbage (*Brassicaceae gen.*), legumes (*Fabaceae gen.*), celery (*Apiaceae gen.*), Valerian (*Valerianaceae gen.*), Gentian (*Gentianaceae gen.*), Plantain (*Plantago sp.*), Lamiaceae (Lamiaceae gen.), Compositae (*Asteraceae gen.*), including

wormwood (Artemisia sp.), dandelion (Taraxacum officinale), cereals (Poaceae gen.).

The differences between the batches are the following: only batch 1 presents primrose pollen (*Primulaceae gen.*), Madder (*Rubiaceae gen.*), Sedge (*Cyperaceae gen.*), Only batch 2 contains cornflower blue (*Centaurea cyanus*) pollen (*Rosaceae gen.*), Nettle (*Urtica sp.*), Typha angustifolia (T*ypha angustifolia*). If you do not take into account the taxon pollen, which is found only in 1–2 samples, then both batches are distinguished by the presence of cabbage pollen (*Brassicaceae gen.*), Legumes (*Fabaceae gen.*), Gentian (*Gentianaceae gen.*) and Rubiaceae (*Rubiaceae gen.*), sedge (*Cyperaceae gen.*) only in batch 1, and pollen of blooming (Chenopodiaceae gen.) and cornflower blue (*Centaurea cyanus*) only in batch 2.

A comparison of the dominant taxa proved that among the pollen of tree species in samples of batch 1 there is no pollen, the content of which is 3 % or more. In batch 2, the dominant taxon is the linden cordate (*Tilia cordata*). Among the pollens of herbaceous plants, the dominant taxa in samples of batch 1 are: cereals (*Poaceae gen.*), Plantain (*Plantago sp.*), Common sorrel (*Rumex acetosa*), aster (*Asteraceae gen.*), Medicinal dandelion (*Taraxacum officinale*), centauria (*Centauriumum sp.*). In samples of batch 2, the dominant taxa include grasses (*Poaceae gen.*), Common sorrel (*Rumex acetosa*), aster (*Asteraceae gen.*), Marijuana (*Chenopodiaceae gen.*), Plantain (*Plantago sp.*).

Comparison of the number of taxa of tree species and shrubs, as well as of herbaceous plants revealed noticeable differences in the compared samples of the two batches in the number of specific families, genera and species, and the number of common taxa is small.

Comparison of the percentage of pollen of the main (background) taxon and other taxa showed that in samples from batch 1 the content of Hypericum pollen (Hypericum sp.) Was 94–98 %, and other taxa, respectively, 2–6 %. In samples from batch 2, the content of Hypericum pollen (Hypericum sp.) Is slightly higher — 97.5–98.5 %. Pollen of other taxa is 1.5–2.5 %.

Comparison of the percentage of tree pollen. This is mainly pine pollen (*Pinus sylvestris*) — 0.5–2 %, and occasionally pollen grains of European spruce (*Picea abies*) and English oak (*Quercus robur*), warty birch (*Betula pendula*) and fluffy (*Betula pubescens*), black alder (*Alnus glutinosa*), heart-shaped linden (*Tilia cordata*), maple (*Acer sp.*), Viburnum (*Viburnum lantana*), willow (*Salix sp.*), alder buckthorn (*Frangula alnus*) and euonymus (*Eonymus sp.*) in an amount not exceeding 0.5 %.

In samples from batch 2, the content of tree pollen is somewhat higher — 2.5–7.5 %; it mainly belongs to the linden-shaped heart (*Tilia cordata*) — from 2 to 6.5 %, less commonly to the common pine (*Pinus sylvestris*), warty birch (*Betula pendula*) and downy birch (*Betula pubescens*), black alder and gray alder (*Alnus glutinosa, A. incana*), elm (*Ulmus sp.*), The number of which does not exceed 0.6 %.

Comparison of the percentage of grass pollen:

— cereal pollen (*Poaceae gen.*) — the dominant taxon in the samples of both batches, is 31–40 % in lot 1, and 47–57 %

— pollen of common sorrel (*Rumex acetosa*) in samples of batch 1 is 8–10 %, and in batch 2 — 15.5–17 %;

— Aster pollen (*Asteraceae gen.*) In samples of batch 1 is 5–9.5 %, in batch 2 their content is higher — 9–17.5 %;

— Chenopodioideae (*Chenopodiaceae gen.*) In samples of batch 1 is 6.5 % (found in one sample), in batch 2 its content is 5.5–9.5 %;

— plantain pollen (Plantago sp.) In samples of batch 1 is one of the dominant — 27–34 %, and in batch 2 it contains only 2–5.5 %;

— pollen of gentian genus (Gentianaceae gen.), Namely, centaury (Centaurium sp.) Is 1.5–8 % in batch 1, and in samples of batch 2 only one pollen grain (0.3 %) is noted;

— pollen of chicory (Cichoriaceae gen.), Namely, dandelion (Taraxacum officinale), in samples of lot 1 is 2.5–7 %. In samples of batch 2, this pollen is rarely found — 0.3–1 %;

— Lamiaceae pollen (Lamiaceae gen.) In batch 1 is 0.5–3 %, and in batch 2 — no more than 0.3 %;

— cabbage pollen (Brassicaceae gen.) In samples of batch 1 is 0.5–2.5 %, and in batch 2 only one pollen grain is noted (0.3 %);

— bean pollen (*Fabaceae gen*.) In samples of batch 1 contains 0.5–2 %, and in batch 2 only one pollen grain Trifolium sp .;

— Celery pollen (*Apiaceae gen*.) Is in the batch of 1 0.5–2 %, and in samples of batch 2 it is only 0.6 %;

— Spotted pollen (Rubiaceae gen.) In samples of batch 1 is 0.5–2.5 %, and in batch 2 this pollen is absent.

In the samples of both parties, other taxa were noted in insignificant quantities or in the form of single pollen grains and only in 1–2 samples.

The research material was dried and crushed raw materials of various herbs: The research material was dried and crushed raw materials of various herbs: Bidens (Herba Bidentis), Hypericum (Herba Hyperici), sage leaves (Salviae Folia), leaves of coltsfoot (Tussilaginis farfarae folia), chamomile flowers (Matricariae flores) and collection vegetable “Stomaran”.

A spore-pollen analysis of crushed plant raw materials belonging to batches produced by different manufacturers, as well as to different batches produced by the same manufacturer, showed that the studied samples of each individual batch have clear differences in a significant number of indicators. The conclusion about the affiliation of the objects presented to the study to various sources of origin can be made on the basis of establishing a significant combination of different qualitative and quantitative indicators of spore-pollen spectra identified for the objects being compared, that is, on the basis of:

— establish the presence of various basic taxa, creating a “background”, in the compared samples (if any);

— establish different percentages of pollen of the main taxon, creating a “background” (if there was one in the compared objects) and the amount of pollen of other taxa;

— establishing differences in the percentage of the three main groups (tree pollen, herbaceous plants and spores) in the total composition of the spectra;

— establishment of various dominant (3 % or more) taxa in each group;

— establishing differences in the percentage of pollen and spores of the dominant (3 % or more) taxa among tree pollen, herbaceous plants and spores;

— identifying differences in the taxonomic composition of tree pollen, herbaceous plants, spores, noted in less than 3 % (taxa found in most of the samples studied in each of the compared objects are taken into account);

— establish a different number of specific taxa in the compared objects, with a significant number of taxa present in only one of the compared objects.

Thus, the results of a spore-pollen analysis of plant materials (on the example of 6 different herbs), belonging to the same batch of one manufacturer, batches of different manufacturers and different batches of the same manufacturer, indicate the possibility of successfully applying the method of spore-pollen analysis as the most informative in expert studies objects of plant origin and, in particular, to solve the problem of establishing the belonging of several objects to a single source of origin. The obtained results can be used in expert practice for solving actual forensic tasks related to the use and distribution of narcotic drugs, including “spice”.

ПРО МОЖЛИВІСТЬ ВИКОРИСТАННЯ СПОРОВО-ПИЛКОВОГО АНАЛИЗУ ДЛЯ ВСТАНОВЛЕННЯ НАЛЕЖНОСТІ РОСЛИННИХ МАТРИЦЬ «СПАЙСІВ» ДО ЄДИНОГО ДЖЕРЕЛА ПОХОДЖЕННЯ

Т. Б. Рилова

При розслідуванні кримінальних справ про поширення й уживання наркотичних засобів виникає необхідність проведення досліджень рослинних матриць, просочених розчином наркотичної речовини. При цьому особливу актуальність нині має вирішення питання про віднесення до однієї партії психоактивных речовин, импрегнированных на неактивні матриці рослинного походження. Метою проведених досліджень стало вивчення можливості застосування методу спорово-пилкового аналізу для доказу належності серії зразків здрібненої рослинної сировини різних трав: черги (Herba Bidentis), звіробоя (Herba Hyperici), листів шавлії (Salviae folia), листів мати-й-мачухи (Tussilaginis farfarae folia), квіток ромашки (Matricariae flores) і збору рослинного «Стомаран» до єдиного джерела походження. Для досягнення поставленої мети необхідно було вирішити такі завдання: визначити, чи містяться в невеликій наважці рослинної сировини пилок і спори рослин у кількості, достатній для обчислення достовірного процентного вмісту окремих таксонів; виконати спорово-пилковий аналіз рослинної сировини декількох серій зразків: а) належних до однієї партії; б) із партій різних виробників; в) належних різним партіям одного виробника; виявити показники, що свідчать про належність порівнюваних серій зразків до єдиного або різним джерелам походження. Результати досліджень свідчать про те, що виявлені особливості складу палінофлори й процентного вмісту окремих компонентів спорово-пилкових

спектрів, отриманих в результаті спорово-пилкового аналізу рослинної сировини, дозволяють виділити низку важливих показників, на підставі яких може бути зроблений упевнений висновок про належність до єдиного або різним джерелам походження. Отже, можна зробити висновок про те, що дані спорово-пилкового аналізу містять винятково важливу доказову інформацію й мають безсумнівне практичне значення для вирішення актуальних експертно-криміналістичних завдань, а використання цього методу є початком нового напряму в судовій палінології в Республіці Білорусь.

Ключові слова: рослинні матриці, спорово-пилковий аналіз, таксономічний склад, кількісні показники, комплекс ідентифікаційних ознак, доказове значення.

О ВОЗМОЖНОСТИ ПРИМЕНЕНИЯ СПОРОВО-ПЫЛЬЦЕВОГО АНАЛИЗА ДЛЯ УСТАНОВЛЕНИЯ ПРИНАДЛЕЖНОСТИ РАСТИТЕЛЬНЫХ МАТРИЦ «СПАЙСОВ» К ЕДИНОМУ ИСТОЧНИКУ ПРОИСХОЖДЕНИЯ

Т. Б. Рылова

Представлены результаты исследований неактивных матриц растительного происхождения, используемых для импрегнирования психоактивных веществ, методом спорово-пыльцевого анализа. Выявлен ряд качественных и количественных показателей, которые могут быть использованы как доказательства принадлежности исследуемых растительных объектов к единому источнику происхождения.

Ключевые слова: растительные матрицы, спорово-пыльцевой анализ, таксономический состав, количественные показатели, комплекс идентификационных признаков, доказательственное значение.

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RESEARCH ON TERRITORIAL DIFFERENTIZATION OF TREE-RING CHRONOLOGIES OF ORDINARY PINE BASED ON CLUSTER ANALYSIS

To date, identification of the place of growth of felled wood is a complex task, the solution of which can be expected on the basis of an integrated methodological approach with the analysis of the results by methods of multivariate statistical analysis. This research demonstrates possibilities and describes in detail the algorithm for applying hierarchical cluster-procedures

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for the regionalization of 85 standardized chronologies of Scots pine, and also presents the results of the experimental studies conducted.

Keywords: cluster analysis, Scotch pine (Pinus sylvestris L.), annual layers, tree-ring chronologies, place of growth, forensic examination, territorial differentiation.

Forests in the Republic of Belarus are one of the main renewable natural resources and the most important factors of environmental safety. The most common forest tree in our country is the pine (*Pinus sylvestris* L.). As of January 1, 2017, the area ofplantations with a predominance of pine in the forest fund was 4,1446 thousand hectares (with a reserve of 968.1 million m^3)[1]. The value of pine as a forest-forming species will not diminish in the future, since it has valuable high-quality wood, which is widely used in various sectors of the economy and in everyday life, and is also exported to other countries. That is why the Strategic Plan for the Development of the Forestry Sector for the Period from 2015 to 2030 provides for a substantial increase in the area of pine forests to 60 % of the State Forest Fund[2]. High consumer qualities determine the fact that pine is the most frequent object of environmental offenses, including violations of forest legislation.

Today illegal logging is a global problem and leads to deforestation and forest degradation. They are characterized by a low probability of detection, since in the overwhelming majority of cases such offenses are carried out under conditions of non-obviousness. In this regard, the task of identifying the origin of wood and confirming the declared place of its harvesting remains relevant. It is worth noting that attempts to solve it on indices of radial growth were made as early as the 1970s of the XX century.[3] In recent years, the rate has been applied to the use of DNA technologies, and the possibilities of chemical and biochemical methods are also actively explored[4]. In our opinion, the dendrochronological method still remains one of the priorities when establishing the local area on which the tree grew.

[1] *Gosudarstvennyj lesnoj kadastr Respubliki Belarus' po sostojaniju na 01.01.2017* [State forestry cadaster of the Republic of Belarus as of 01.01.2017]. Ministry of Forestry of the Republic of Belarus; Forestry. Rep. unitary Belgosles company. Minsk, 2017. 95 [in Russian].

[2] *Strategicheskij plan razvitija lesohozjajstvennoj otrasli na period s 2015 po 2030 gody, utv. zam. Prem'er-ministra Respubliki Belarus' ot 23 dekabrja 2014 g*. [Strategic Plan for Forestry Development for the period from 2015 to 2030, approved. the substitute of the Prime Minister of the Republic of Belarus dated December 23, 2014] № 06/201–271. 20 p. [in Russian].

[3] Rozanov M. I. (1969). *Ustanovlenie istochnika proishozhdenija dereva. Kriminalisticheskoe issledovanie veshhestvennyh dokazatel'stv fizicheskimi, himicheskimi i biologicheskimi metodami*. [Identifing the tree source. Forensic research of physical evidence by physical, chemical and biological methods]. Moscow : TsNIISED, Issue 2. P. 34–36; The same author. (1971) *Dendrohronologicheskie metody jekspertizy drevesiny. Jekspertnaja tehnika.* [Dendrochronological methods of wood examination. Expert Equipement]. Moscow : TsNIISED, Issue 34. P. 45–65 [in Ukrainian].

[4] Dalnigrin, a neoflavonoid marker for the identification of Brazilian rosewood (Dalbergia nigra) in CITES enforcement / [G. C. Kite, p. W. Green, N. C. Veitch et al.]. Phytochemistry. 2010. Vol. 71. № 10. P. 1122–1131; Kagawa A. Leavitt S. W. Stable carbon isotopes of tree rings as a tool to pinpoint the geographic origin of timber. J. Wood Sci. 2010. Vol. 56. P. 175–183.

The purpose of this study is to assess the potential for using dendrochronological information in combination with the methods of multivariate statistical analysis to determine the place of growth of felled wood.

The object of the study was mossy pine forests (*Pinetum pleuroziosum*), eagle (*Pinetum pleuroziosum*) and blueberry (*Pinetum myrtillosum*). It was considered relevant to consider the features of territorial differentiation in these types of forests because of their dominant position by area.

Dendrochronological material from temporary test areas (WFP) established in 2015–2017 was used in the work. throughout the republic in the framework of the implementation of task 3.2.01 "Development of new approaches to the study of objects of plant origin when conducting forensic research", under the state program of scientific research "Informatics, space and security.", Temporary test plots were laid according to generally accepted methods in the field of forest science and forest inventory.

On each test plot, 20 wood of the highest Kraft classes were sampled using the age drill *Haglof* to take wood samples (drill cores) from opposite sides perpendicular to the longitudinal axis of the tree trunk at a height of 1–1.3 m from the ground surface. Prior to direct measurements of the width of the annual layers (WGS), the surface of the drill cores was previously prepared. For this purpose, the samples were soaked for 10–15 minutes in hot water (70–80 ° C) with a few drops of glycerin. Then secured with screws on a special metal core holder for ease of cutting and preventing fracture. Next, cut the upper part with a thickness of 1–1.5 mm using a pistol knife with a retractable trapezoid blade. The prepared wood samples were scanned on an Epson Perfection V19 flatbed scanner with a resolution of 1200 dpi. ShGS calculations themselves were performed using the DendroExp workstation (with an accuracy of 0.01 mm)[1].

As a result of the research, 85 generalized standardized tree-ring chronologies (DKH) were constructed (stTRC_1 — stTRC_85). Standardization for the purpose of eliminating the age trend was carried out separately for each tree, followed by averaging the indices of the radial increment over the object (i.e., on the runway) using the simple 5-year moving average. Later, in the obtained chronologies, a period of 60 years was considered (for reliable dating, it is necessary to superimpose one DX on another in a segment of not less than 50 layers[2]).

An analysis of the results obtained showed that the SHGs of the pine trees studied vary from 0.30 to 3.40 mm. As for territorial differentiation, here we

[1] Khokh A. N. Kuzmenkov D. E. (2017) *Avtomatizirovannoe rabochee mesto «DendroExp» kak instrument dlja racionalizacii provedenija dendro-hronologicheskih jekspertnyh issledovanij. Kriminalistichnij visnik* [Automated workplace DendroExp as an instrument for streamlining dendrochronological expert research. Kryminalistychnyi visnyk]. Kyiv, № 1(27). P. 133–140 [in Ukrainian].

[2] Kolchyn B. A. Chernykh N. B. (1977) *Dendrohronologija Vostochnoj Evropy* [Dendrochronology of Eastern Europe]. Moscow : Nauka, 129 p. [in Russian].

can note the fact that in the southern part of the Republic of Belarus there are large values of the average width of the annual layer. However, in the north of the country, at individual stands, the average GHS may be comparable, and in some cases, more than in the south. Thus, at runway number 17, located in the northern part (Rossonsky district, Vitebsk region), the average width of the annual layer is 1.16 mm, which is greater than, for example, at runway number 68 and runway number 69 (Khoiniki District, Gomel region.) and runway number 84 (Malorita district, Brest region.) — objects of the southern part. This fact is due to the fact that the width of the annual layer is exerted by the combined effect of both general, synchronous growth of trees over large areas, and private, typical for local areas, environmental factors. Their diversity explains the difference in the width of the annual layer of the stands on each single runway.

The standard deviation is minimal (0.07) for stTRC_69 (Kalinkovichi district, Gomel region) and maximum (1.32) for stTRC_54 (Hotim district, Mogilev region). It should be noted that the average standard deviation of the width of the tree layers of individual chronologies for individual plots for most cases (77 of 85) was at least half of the average radial growth of trees in the plot.

The smallest variation (9.06 %) was observed for stTRC_32 (Zhabinkovsky district, Brest region), while the largest (46.11 %) was observed for stTRC_82 (Malorita district, Brest region). In general, the coefficient of variation of the SHGS, reflecting the weather variability of the radial increment, is higher on the runways laid down in the Mogilev region.

A high interserial correlation coefficient was noted for the general period compared (an average of 0.65), which made it possible to combine the individual DTCs into generalized ones. Only in one case it turned out to be lower than 0.50 (COR = 0.47 for stTRC_29 — Kamenetsky district, Brest region). The maximum value was 0.77 (stTRC_70 — Rechitsa District, Gomel Region). The population EPS signal for all analyzed chronologies is above the generally accepted threshold of 0.85, which indicates their high quality. The average sensitivity coefficient of pine chronologies for the total period from 1956 to 2014 in the studied stands is 0.19 and ranges from 0.11 (stTRC_5 — Verkhnedvinsk district, Vitebsk region) to 0.33 (stTRC_84 — Brest p. -n Brest region.). The computed signal-to-noise ratio (SNR), i.e., the force of external influence, for most pine chronologies is> 20.00 and only for stTRC_30 less than this value — Kamenetsky district of Brest region (17,74), which indicates that the studied trees are sensitive to changes in environmental, including climatic, factors.

In general, the calculated statistical parameters confirm the fact that all DKH are representative, and therefore can be used during dendroecological studies.

To answer the questions — are there within the Republic of Belarus some groups / regions similar in radial growth dynamics? if so, how many such groups exist? Used cluster analysis (KA). Since the number of objects of

research is relatively small (up to 100–150), methods based on hierarchical agglomerative procedures were used.

First, we checked the scale and scales, in which the traits under study (parameters of radial growth) are presented. The check is due to the fact that if, for example, the average width of one annual layer is 15 mm (1st variable), and the second is 0.05 mm (2nd variable), then when calculating the distance between the DFC even minor differences on the 1st the variable will make a significant contribution to the increase in distance, however, as large enough differences in the 2nd variable will be invisible. In our study, the data (parameters of the radial growth) were brought to a comparable scale by carrying out a standardization procedure.

Cluster analysis of DKH stTRC_1 — stTRC_85 was performed using the software package Statistica 10.0 (StatSoft, USA), which implemented the necessary agglomerative / unifying cluster procedures. After downloading the data, we entered the cluster analysis module using the Statistics → Multivariate Exploratory Techniques → Claster Analysis menu item. In the window that opens, select Joining (tree clustering). Selecting this item triggers hierarchical classification algorithms.

In the module window of the hierarchical KA, the tab Advanced was passed. We pressed the Variables button and selected 60 analyzed variables for analysis (the width of the annual layer from 1956 to 2016). In the Input file drop-down list, the default Raw data option was left. In the drop-down list Input file left the default option Raw data. This means that the initial data are presented in the form of a table "object-property", the lines of which correspond to the objects (85 standardized tree-ring chronologies of pine), and the columns correspond to the features characterizing these objects (annual width in a specific calendar year). In the Cluster drop-down list, the default option was Variables (columns), meaning that signs (columns) will be clustered.

Next, we determined the metric (drop-down list — Distance measure). The Statistica program contains several variants (for example, Squared euclidean distance — quadratic Euclidean distance; Euclidean distance — usual Euclidean distance; Chebychev distance metric — Chebyshev distance, etc.). Since we did not have information that some sign (year) is more important for classification than the others, we tried to equally take into account the differences for each, therefore we chose the option — 1-r Pearson as the metric.

Then, from the drop-down list of Amalgamation (linkage), the rule chose the clustering algorithm — the Ward's method — because in the overwhelming majority of cases it produces rather compact and well-separated clusters.

The results of the hierarchical classification in the form of a vertical dendrogram (Vertical Icicle Plots) are presented in Fig. 1. Fig. 1.

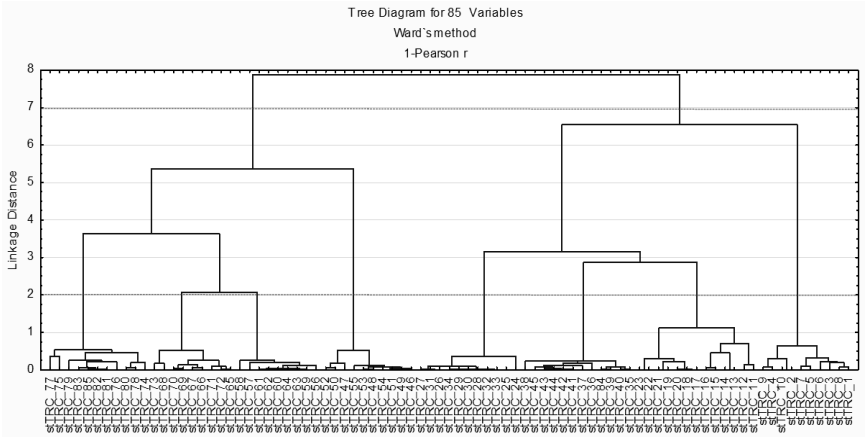


Fig. 1. Type of received dendrogram containing 85 standardized DFCs

To determine the number of stable clusters into which it is expedient to divide the tree-ring chronologies being analyzed, a threshold distance was chosen — this is an indicator, above which even unrelated objects will be combined into clusters. After selecting the threshold distance, perpendicular lines were drawn through the points corresponding to the selected distance (indicated by ellipses in Fig. 1), and the number of its intersections with the branches of the dendrogram was counted. The number of intersections determined the number of clusters, and the objects that appeared on the severed branch — their composition. So, at a threshold distance of 7, 2 fairly large clusters are distinguished, and at a threshold distance of 2, 8 clusters.

It should be noted that the final choice of the number of clusters was determined on the basis of the analysis of special quality functionals and the possibility of their meaningful interpretation. The most effective tool for visually determining the number of clusters in the Statistica 10.0 program is the distance graph (Graphs of Amalgamation Schedule), which is built during the sequential process of splitting the DX into clusters (Fig. 2).

Distance table (Amalgamation Schedule), presented in Fig. 3, contains a cluster merging protocol. The first column of the table contains the distance at which the corresponding cluster is located (indicated in the corresponding row), and each line contains the names of the objects (stTRC_1 — stTRC_85) that make up the corresponding cluster.

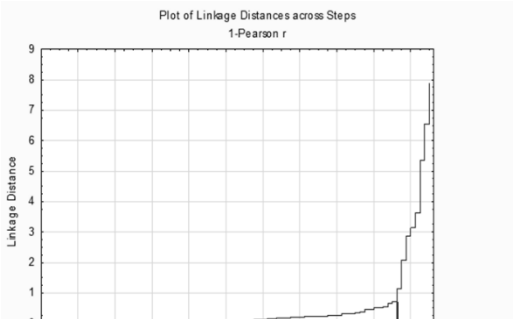


Fig. 1. Schedule of clustering objects by the Ward method

The use of these tools to determine the number of clusters was based on the following practical recommendations:

1) on the graph (Figure 2) there is a point of the fracture and the number of step m, on which there was a "fracture"; then the number of clusters is n-m, where n is the number of DKH in the sample; 2) in the column linkage distance of the distance table (Fig. 3) there is a number of step m, the union of which occurred already at a significantly greater distance than in step m-1; then the number of clusters is n-m, where n is the number of DKH in the sample.

Amalgamation Schedule (Spreadsheet4)
Ward`s method
1-Pearson r

linkage distance	Obj. No. 2	Obj. No. 3	Obj. No. 4	Obj. No. 5	Obj. No. 6	C
,7049595	stTRC_12	stTRC_13	stTRC_14	stTRC_15	stTRC_16	
1,129444	stTRC_12	stTRC_13	stTRC_14	stTRC_15	stTRC_16	st
2,072776	stTRC_59	stTRC_63	stTRC_64	stTRC_60	stTRC_62	st
2,875023	stTRC_12	stTRC_13	stTRC_14	stTRC_15	stTRC_16	st
3,145555	stTRC_12	stTRC_13	stTRC_14	stTRC_15	stTRC_16	st
3,628002	stTRC_59	stTRC_63	stTRC_64	stTRC_60	stTRC_62	st
5,352645	stTRC_49	stTRC_51	stTRC_54	stTRC_48	stTRC_53	st
6,548593	stTRC_8	stTRC_3	stTRC_6	stTRC_5	stTRC_7	s
7,876769	stTRC_8	stTRC_3	stTRC_6	stTRC_5	stTRC_7	s

Fig. 3. Table of combining objects by the Ward method

In our case, as a break point, we can consider the step numbered 77, that is, we get 85–77 = 8 clusters. The same number of clusters is confirmed by the analysis of the table of distances: at step 77, highlighted in Fig. 3, the largest distance jump occurred.

Analyzing further the order of arrangement of the DX from left to right on the dendrogram (Fig. 1), we note that: 1 cluster — DX from 1 to 10; Cluster 2 — DKH from 11 to 23; Cluster 3 — DKH from 35 to 45; Cluster 4 — DKH from 24 to 34; Cluster 5 — DKH from 46 to 55; 6 cluster — DKH from 56 to 64; Cluster 7 — DKH from 65 to 73; Cluster 8 — DKH from 74 to 85. It is in this order that the names of the DKH are listed in the last row of the distance table presented in Fig. 3. Therefore, we copied this line to Excel, transposed it into a column using the Paste Special operation (special insert), and then copied again to the new data file in Statistica 10.0 and put the corresponding cluster number in all DTH in the new column. After this, a table was compiled containing information on the composition of each cluster.

Table

The composition of clusters, selected by the method of ward

Cluster number	Number of objects in the cluster	Cluster composition
1	10	DKH stTRC_1 — stTRC_10; Vitebsk region; Districts: Rossky, Verhnedvinsk, Gorodok
2	13	DKH stTRC_11 — stTRC_23; Minsk region; Districts: Myadelsky, Vileysky, Molodechno, Borisovsky
3	12	DKH stTRC_35 — stTRC_45; Grodnensk region; Districts: Shchuchinsky, Lida, Dyatlovsky, Grodno
4	11	DKH stTRC_24 — stTRC_34; Brest region; Districts: Kamenetsky, Zhabinkovsky
5	10	DKH stTRC_46 — stTRC_55; Mogilev region; Districts: Khotymsky, Klimovichy, Krasnopolsky, Cherikovsky
6	9	DKH stTRC_56 — stTRC_64; Brest region; Districts: Pinsk, Luninetsky, Stolinsky
7	9	DKH stTRC_65 — stTRC_73; Gomel region; Districts: Khoyniki, Braginsky, Kalinkovichy, Rechitsky
8	11	DKH stTRC_74 — stTRC_85; Brest region; Districts: Brest, Maloritsky

Thus, in the course of the research we answered the questions posed — yes, within the Republic of Belarus there are groups / regions similar in radial growth dynamics; their number is 8. The proposed cluster analysis algorithm makes it possible to analyze a large array of quantitative dendrochronological data. The information obtained, along with other characteristics of the DX, such as general trends in graphs, pronounced periods of inhibition, correlation and synchronicity coefficients, etc., can be effectively used to solve problems associated with determining the place of growth of felled pine wood and confirming the declared place of its harvesting.

However, it should be noted that the selected dendrochronologically homogeneous groups / regions for which tree-ring master chronologies are developed are quite large in size, which allows only the widest group affiliation of pine timber to be established. Therefore, in the future, it is necessary to increase the resolution of the dendrochronological analysis. This task can be successfully solved with the use of information about the anatomical structures and elemental composition of the annual layers, which will allow to reveal the heterogeneity within dendrochronologically homogeneous regions.

ДОСЛІДЖЕННЯ ТЕРИТОРІАЛЬНОЇ ДИФЕРЕНЦІАЦІЇ ДЕРЕВИННО-КІЛЬЦЕВИХ ХРОНОЛОГІЙ СОСНИ ЗВИЧАЙНОЇ ЗА ДОПОМОГОЮ КЛАСТЕРНОГО АНАЛІЗУ

А. М. Хох, В. Б. Звягінцев

Надано спробу оцінити потенціал використання дендрохронологічної інформації в комбінації з методами багатомірного статистичного аналізу для встановлення регіональної належності соснових пиломатеріалів. Розрахунки параметрів радіального приросту (з точністю до 0,01 мм) виконували за допомогою автоматизованого робочого місця Dendroexp. У результаті проведених досліджень було побудовано 85 узагальнених стандартизованих деревинно-кільцевих хронологій (ДКХ). Стандартизація проводилася окремо для кожного дерева з наступним усередненням індексів радіального приросту по об'єкту (тобто за тимчасовими пробними площами) методом простої 5-річної ковзної середньої. Надалі в отриманих хронологиях розглядався проміжок тривалістю в 60 років. Розраховані статистичні параметри, такі як коефіцієнт синхронності, коефіцієнт чутливості та ін., підтвердили той факт, що всі аналізовані ДКХ є репрезентативними, а тому можуть бути використані в дендроекологічних дослідженнях. Для відповіді на питання, чи існують у межах Республіки Білорусь деякі групи/регіони, подібні за динамікою радіального приросту, використовували кластерный аналіз у програмі Statistica 10.0. У результаті було виділено 8 кластерів однорідних деревинно-кільцевих хронологій сосни звичайної, подібних за динамікою радіального приросту. Таким чином, за допомогою запропонованого алгоритму кластерного аналізу можна проаналізувати значний масив кількісних дендрохронологічних даних, що, поряд з іншими характеристиками ДКХ (загальною тенденцією графіків, вираженими періодами гноблень, коефіцієнтами кореляції й синхронності та ін.), дозволить із великим ступенем вірогідності вирішувати завдання зі встановлення місця зростання зрубаної деревини сосни й підтвердженняя декларируюмого місця її заготовки.

Ключові слова: кластерный аналіз, сосна звичайна (Pinus sylvestris L.), річні шари, деревинно-кільцеві хронології, місце зростання, судова експертиза, територіальна диференціація.

ИССЛЕДОВАНИЕ ТЕРРИТОРИАЛЬНОЙ ДИФФЕРЕНЦИАЦИИ ДРЕВЕСНО-КОЛЬЦЕВЫХ ХРОНОЛОГИЙ СОСНЫ ОБЫКНОВЕННОЙ С ПОМОЩЬЮ КЛАСТЕРНОГО АНАЛИЗА

А. Н. Хох, В. Б. Звягинцев

На сегодняшний день идентификация места произрастания срубленной древесины представляет собой сложную задачу, решение которой можно ожидать на основе комплексного методического подхода с анализом результатов методами многомерного статистического анализа. В настоящем исследовании показаны возможности и подробно описан алгоритм применения иерархических кластер-процедур для регионализации 85 стандартизированных хронологий сосны обыкновенной, а также представлены результаты проведенных экспериментальных исследований.

Ключевые слова: кластерный анализ, сосна обыкновенная (Pinus sylvestris L.), годичные слои, древесно-кольцевые хронологии, место произрастания, судебная экспертиза, территориальная дифференциация.

FORENSIC ENGENEERING: METHODOLOGICAL APPROACHES TO SOLVING TASKS

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INFLUENCE OF VERTICAL LOADING ON BRAKING FORCE AND LINKING COEFFICIENT AND TYRED WHEEL

Influence of vertical load on the linking coefficient of automobile wheel in the braking mode on the basis of experimental researches is analyzed. Research results of different authors concerning the degree of influence of various factors on the linking coefficient are presented. Taking into account the inconsistency of the coefficient of adhesion in expert automotive practice will allow modeling the dynamics of TP braking with automatic regulation systems at a higher level and with greater reliability.

Keywords: vehicle, realized linkage, linking coefficient, car wheel.

It is known that the fundamental basis of active safety of a vehicle (TP) is its braking properties, and the nature of braking depends on the interaction of car tires with road surfaces. Such interaction in the theory of the car is usually described by the coefficient of clutch, which can be implemented both

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in the longitudinal and transverse directions relative to the plane of rotation of the wheel vehicle.

Analysis of scientific and technical literature has shown that the term "longitudinal coefficient of clutch", is understood to mean the ratio of only the maximum longitudinal response of the road to the wheel $R_x^{\max}$ to its normal reaction R_z in the specific loading, speed and coupling conditions of the wheel of the vehicle.

However, despite this, there are publications[1] in which the ratio of these forces is understood by the coefficient of clutch, which in our opinion is incorrect and contradicts the physics of the processes that arise in the contact area of the tire with a road surface. It is obvious that the value of the coefficient of clutch during braking vehicle influences a large number of factors, the impact analysis of which requires additional consideration. Given the fact that the coefficient of adhesion depends on various factors, in order to determine the nature of its change during the braking process, it is necessary to identify the most significant factors on which the effectiveness of braking TK significantly depends. It is known that the value of the coefficient of adhesion depends on the quality and condition of the road surface (the material of the coating, the degree of its roughness, hardness, looseness and moisture), the shape of the tire tread pattern (the number, size and position of the protrusions and grooves), the air pressure in the tire, from the speed of rotation of the wheel and the magnitude of the vertical load that falls on the wheel[2].

As an illustration of the above considerations, we will consider the results of the study on the influence of various factors on the magnitude of the longitudinal coefficient of adhesion for a tire of a car with a tread type "shashka", on a dry (solid line) and wet (dotted line) asphalt concrete pavement (Figure 1).

[1] Vonh D. Publications referred above; Ilaryonov V. A. Traffic collision forensic examination: Tutorial for Higher schools. Moscow : Transport, 1989. 255 p.; Ilaryonov V. A. Pchelyn Y. K. (1975) *Jekspertiza dorozhno-transportnyh proisshestvij : uchebnik dlja vuzov* [Analysis of the brake dynamics of the bus]. Lvov: Trudy VKEIavtobusproma, p. 95–110; Pacejka H. B. Tire and vehicle dynamics: 2-nd edition. Oxford: Butterworth-Heinemann, 2006. 642 p.; Mark D. The dynamics of antilock brake systems. European Journal of Physics. 2006. V. 26. 6. P. 1007–1016.

[2] *Realizacija intellektual'nyh funkcij v jelektronno-pnevmaticheskom tormoznom upravlenii transportnogo sredstva : monografija* (2015) [Implementation of intelligent functions in electronic-pneumatic brake control of a vehicle : monograph] / D. N. Leontev, A. N. Turenko, V. A Bohomolov and others. 2-nd edition supplemented. Kharkov : KhNAHU, 450 p.; Levyn M. A. Fufaev N. A. (1989) *Teorija kachenija deformiruemogo kolesa* [The theory of rolling of a deformable wheel]. Moscow : Nauka, 272 p.; *Rabota avtomobil'noj shiny* (1976) [The work of the car tires] / V. Y. Knoroz, E. V. Klennykov, Y. P. Petrov and others. Moscow : Transport, 240 p.; Knoroz V. I. Klennykov E. V. (1989) *Teorija kachenija deformiruemogo kolesa* [The theory of rolling of a deformable wheel]. Moscow : Nauka, 272 p. [in Russian].

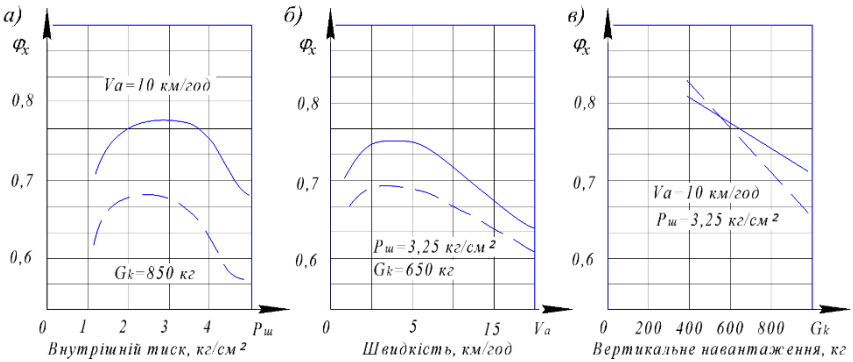


Fig. 1. Dependence of the coefficient of longitudinal grip on the air pressure in the tire (a), the initial braking rate of vehicle (b) and vertical load on the wheel (c)

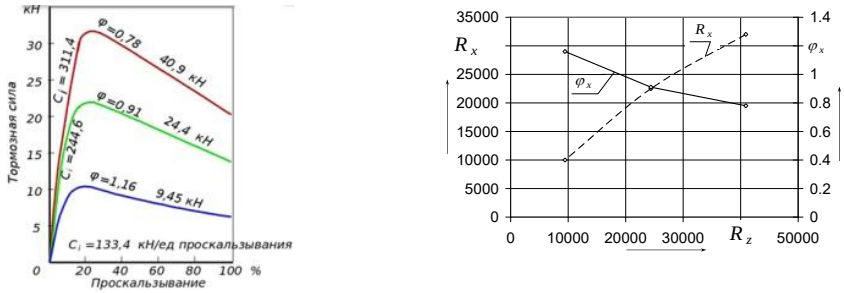
From fig.1a it can be seen that, in the case of an increase in the inner tire pressure, the coefficient of clutch initially increases, and then, reaching its limit value, decreases. With an increase in the initial speed from which the braking of the vehicle began, the coefficient of clutch is reduced, and only at low speeds it has its maximum value (Fig. 1b). These results are also confirmed by studies by other authors[1]. Increase in the vertical load on the wheel leads to a decrease in the coefficient of clutch (Fig. 1v), which, in turn, at first glance contradicts the provisions of the theory of the car, which is given as a dependence (1). But let's not hurry with conclusions and consider the issue comprehensively.

$$R_x = R_z \cdot \varphi_x , \qquad (1)$$

Analysis of the curves (Fig. 2) obtained experimentally[2] on the road with dry asphalt coating shows that with increasing the vertical load on the wheel according to the dependence (1), the maximum longitudinal response of the road to the wheel $R_x^{\max}$ increases, but not proportional to the increase of the normal reaction R_z.

[1] *Osnovy sozdanija i issledovanija jelektronno-pnevmaticheskogo tormoznogo upravlenija transportnyh sredstv : monografija* (2012) [Fundamentals of the creation and research of electronic-pneumatic brake control of vehicles : monograph] / A. N. Turenko, V. Y. Klymenko, L. A. Ryzhykh and others. Kharkov : KhNADU, 288 p.

[2] Vonh D. Publications referred above;



a *b*

Fig. 2. The effect of normal loading on the longitudinal braking force that occurs in the contact area of the bus 10.00–20 F of a truck with asphalt covering: a) the results of an experimental study; b) the interpretation of experimental research in other coordinates

From the illustrations depicted in Fig. 2, it is obvious that with the increase of the normal reaction R_z, the value of the coefficient of adhesion is reduced. Moreover, it should be noted that with an increase in the normal reaction of 4,33 times (ie 333 %), the coefficient of adhesion is reduced by 33 % (that is, 1,5 times), with the maximum longitudinal response of the road on the wheel increases only 3 times (that is, by 191 %).

To study this ambiguous phenomenon in our co-authorship[1], bench tests were conducted in the laboratory of the department of cars named after. A. B. Gredeskul Kharkiv National Automobile and Road University at a large inertial stand. For research, a wheel with a tire of standard size 11-R20 was used. When performing bench tests, the method of determining the wheel locking limit, which is set out in the international standard UN № 13 (Appendix № 13), was used[2]. By the criterion for evaluating the wheel locking limit during braking, the braking performance was taken with the preservation of stability and handling, which was evaluated by the braking distance and the duration of the braking process.

[1] Implementation of intelligent functions in electronic-pneumatic brake control of a vehicle: monograph /.

[2] Regulation № 13 of the Economic Commission for Europe of the United Nations (UN/ECE). Uniform provisions concerning the approval of vehicles of categories M, N and O with regard to braking: on condition 30.09.2010. Official Journal of the European Union. UN/ECE, 2010. 257 p.

In the course of experimental studies, it was found that the most rational braking performance with preservation of stability and handling can be obtained only under conditions where the wheels of the vehicle are blocked at the end of the braking process (speed less than 15 km/h). The absence of wheel lock at the end of the braking process leads to a reduction in braking performance, and hence to an increase in the braking distance and the duration of inhibition (Fig. 3–5).

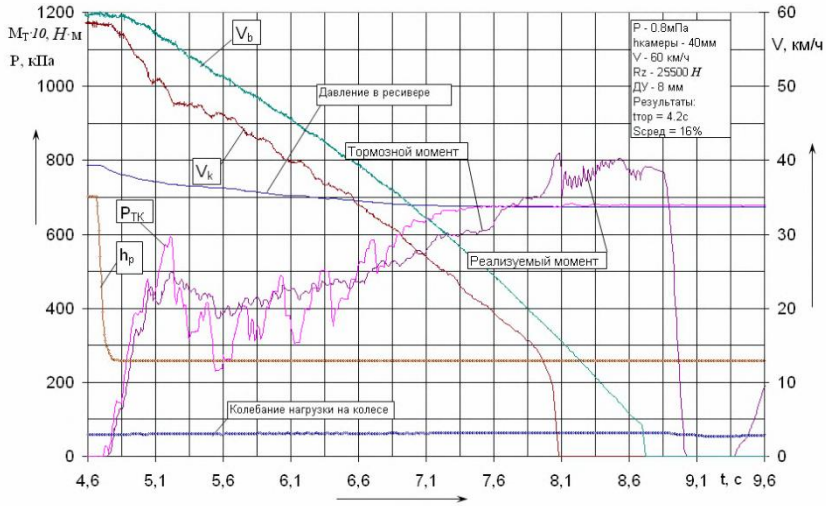


Fig. 3. Oscillogram of experimental researches of braking of the Zil-4335 car wheel under the influence of an anti-lock system with a control unit of KhNADU and Knorr-Bremse modulator (25500 wheel load H)

The conducted studies confirmed the results shown in Fig. 2, the coefficient of clutch is not a constant value and essentially depends not only on the initial speed of braking TK, but also on the load falling on the wheel. As the vertical load on the wheel decreases, the coefficient of clutch increases (Fig. 5).

Experimental studies of rolling the car wheel on the locking edge showed that the high change in the rate of filling the brake chamber does not contribute to increasing the braking efficiency, and therefore the work of the modulator in the mode of intensive filling of the brake chamber does not make sense. Vice versa, as experimental researches have demonstrated, the reduction in the rate of filling of the brake chamber increases the efficiency of braking, although at the initial moment of time, due to the low braking torque, the efficiency is slightly underestimated. On the basis of experimental studies of the braking process of a wheel under the influence of an anti-lock system with a control unit, which was developed at the Department of

Automobile. A. B. Gherezkul in KhNADU, using the algorithm with the interruption of the brake control phase, it can be argued that the effectiveness of braking significantly depends only on the law of the change of braking torque during braking and does not depend on other external factors that affect the realized coupling between the bus and the support surface.

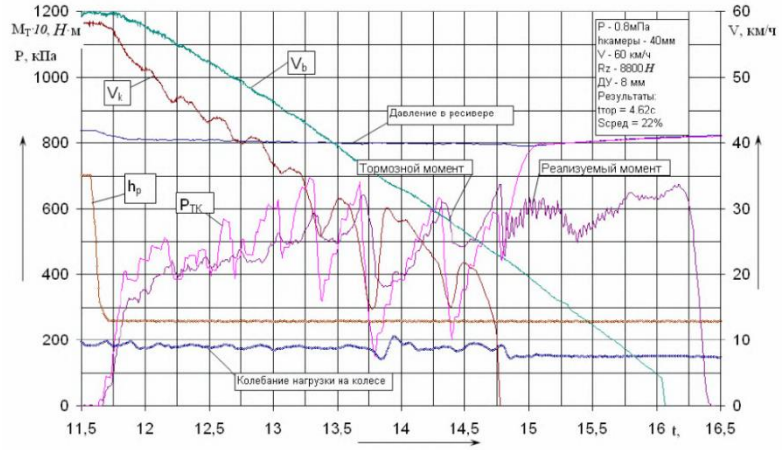


Fig. 5. Oscillogram of experimental researches of the process of implementation of the coupling of a tire of a wheel of a wheel Zil-4335 (standard size 11-R20) depending on the time during rolling of a wheel on the blocking edge under the influence of an antiblocking system on a metal drum with a coefficient of slip friction (φ_{tr}) 0,35–0,45 units

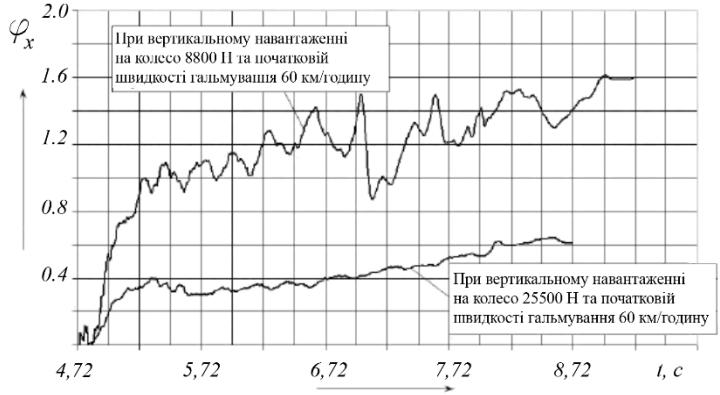


Fig. 4. Oscillogram of experimental studies of braking of the Zil-4335 car wheel under the influence of an anti-lock system with a control unit of the KHNADU and Knorr-Bremse modulator (8800–wheel load H)

The analysis of the experimental oscillograms obtained made it possible to draw the following conclusions:

— increase or decrease of the vertical force loading the wheel does not significantly affect the brake torque applied during the rolling of the wheel on the locking edge under the influence of the system of automatic control of the braking force;

— the braking torque realized depends on the mass of the towing vehicle and the coupling coefficient that is implemented between the tire and the support surface;

— the braking torque on the wheel has a nonlinear dependence on the pressure in the brake chamber during the dynamic processes occurring in the brake mechanism;

— when the load on the automobile wheel is reduced, the linearity between the braking torque and the pressure in the brake chamber becomes more pronounced and corresponds to static characteristics, in which there is precise copying of the brake torque in the brake chamber;

— realized grip between the tire and the surface of the road surface is an unstable and varies depending not only on the braking rate, but also on the magnitude of the vertical force that loads the wheel. By reducing the vertical force that loads the wheel, the realized coupling increases.

Analysis of the experimental dependencies shown in Fig. 3–5 showed that the change in vertical load, for example, as a result of its redistribution during braking, leads to an increase or decrease of the angular deceleration at the time of the lock and does not have a general effect on the braking process.

When the vertical load is reduced, the automatic regulation system, which is based on the principle of interrupting the adjustment phases, operates at a lower frequency and spends less amount of working fluid (air) in the pneumatic actuator of the brakes. This circumstance is explained by the fact that in order to stop the vehicle with the same weight with a reduced load on the wheel, the threshold of operation of the system of automatic control of the brake torque in time comes later than the same limit value for a greater load on the wheel, since the implementation of the coupling of the tire through the decrease of the load increases (Fig. 5).

It should be noted that the realized coupling increases in proportion to the decrease in load, with the braking force practically does not change or changes in a very narrow range. This effect is explained by the rigid and deformation properties of the pneumatic tire.

Based on the stiff and deformation properties of the tire mathematically, the change in the coefficient of clutch can be described by the dependence:

$$\varphi_x = \frac{C_x \cdot \xi_x}{r_d \cdot R_z}, \qquad (2)$$

where; C_x torsional rigidity of the tire, H m / rad; ξ_x — the angle of the twist of the tire, rad; r_d — dynamic wheel radius, m.

For the two different states of motion of the wheel (which runs with maximum efficiency ($\xi_x^{\max}$) and locked ($\xi_x^{\text{бл}}$) the value ξ_x can be determined from expression (3) or (4) respectively[1].

$$\xi_x^{\max} = \varphi_{tr} \cdot r_d \cdot \left(4.625 - 4.29 \cdot \exp\left(0.0018 \cdot V_k\right)\right), \quad (3)$$

$$\xi_x^{\text{бл}} = \frac{0{,}219 \cdot \varphi_{tr} \cdot r_d}{\exp\left(0.01861 \cdot V_a\right)}, \quad (4)$$

where φ_{tr} — coefficient of friction slip; V_k — speed of rotation of the wheel, m/s; V_a — speed of the vehicle, m/s.

On the basis of the conducted researches[2], the value C_x can be determined from expression (5), which is proposed as a semiempirical dependence[3].

$$C_x = \left(100 - \frac{B_0}{g \cdot C_x^{P_{\max}} \cdot \exp\left(10 \cdot B_1 \cdot P^2\right)}\right) \cdot \left(635 \cdot \ln\left(R_z\right) - 5060\right), \quad (5)$$

$$B_0 = \frac{1000 \cdot C_x^{P_{\min}}}{\exp\left(B_1 \cdot P_{\min}\right)}, \quad (6)$$

$$B_1 = \frac{\ln\left(\frac{C_x^{P_{\max}}}{C_x^{P_{\min}}}\right)}{P_{\max} - P_{\min}}, \quad (7)$$

where g — acceleration of free fall, m/s^2; $C_x^{P_{\max}}$ — experimental value of torsional rigidity of the tire at the maximum allowable air pressure in the tire; $C_x^{P_{\min}}$ — Experimental value of torsional rigidity of the tire at the minimum permissible air pressure in the tire; P — tire pressure, MPa; $P_{\max}$ — maximum tire pressure, MPa; $P_{\min}$ — minimum tire pressure, MPa.

Taking into account the inconsistency of the coefficient of adhesion in expert automotive practice will allow modeling the dynamics of vehicle

[1] Implementation of intelligent functions in electronic-pneumatic brake control of a vehicle:
[2] Levyn M. A. Fufaev N. A. Publications referred above; Work of car tires; Knoroz V. I. Klennykov E. V. Publications referred above.
[3] Ryzhykh L. A. Leontev D. N. Bykadorov A. V. (2014) *Opredelenie prodol'noj realizuemoj sily sceplenija avtomobil'nogo kolesa s opornoj poverhnost'ju po krutil'noj deformacii shiny i ee zhestkosti. Moskva: Avtomobil'naja promyshlennost'* [Determination of longitudinal realizable force of coupling of a car wheel with a supporting surface on a torsional deformation of a tire and its stiffness]. Moscow : Automobile industry, № 10, p. 20–24 [in Russian].

braking with automatic regulation systems at a higher level and with greater reliability.

As shown by experimental studies, performed at the Department of Automobile them. A. B. Gherezkul in KhNADU, the significant influence on the coefficient of clutch gives the initial braking rate of TK (up to 20 %) and the vertical load on the wheel (up to 56 %). Moreover, the smaller the value of the vertical load, the stronger its effect on the coupling properties of the tire. Reducing the load on the wheel 3–4 times leads to a decrease in the brake pressure in the brake chamber by 13 % (P_{TK}) and reducing the limiting slip ($S_{average}$). At the same time, the reduction of the vertical load on the wheel practically does not affect the steady slowdown of the vehicle, which stops (increases by 2 %) with its unchanged weight.

Increase in the mass of the vehicle leads to a decrease in the coupling properties of its tires, and, consequently, to a decrease in the size of the deceleration, reducing its mass, on the contrary, increases the coupling properties between the tire and the support surface, which, accordingly, positively affects the effectiveness of the braking vehicle (its slowing increases).

ВПЛИВ ВЕРТИКАЛЬНОГО НАВАНТАЖЕННЯ НА ГАЛЬМІВНУ СИЛУ ТА КОЕФІЦІЄНТ ЗЧЕПЛЕННЯ ШИНИ АВТОМОБІЛЬНОГО КОЛЕСА

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Проаналізовано вплив вертикального навантаження на коефіцієнт зчеплення автомобільного колеса в режимі гальмування на основі експериментальних досліджень. Наведено результати досліджень різних авторів щодо ступеня впливу різних чинників на коефіцієнт зчеплення. Урахування непостійності значення коефіцієнта зчеплення в експертній автотехнічній практиці дозволить моделювати динаміку гальмування ТЗ із системами автоматичного регулювання на більш високому рівні та з більшою достовірністю.

Ключові слова: транспортний засіб, реалізоване зчеплення, коефіцієнт зчеплення, автомобільне колесо.

ВЛИЯНИЕ ВЕРТИКАЛЬНОЙ НАГРУЗКИ НА ТОРМОЗНУЮ СИЛУ И КОЭФФИЦИЕНТ СЦЕПЛЕНИЯ ШИНЫ АВТОМОБИЛЬНОГО КОЛЕСА

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Проанализировано влияние вертикальной нагрузки на коэффициент сцепления автомобильного колеса в режиме торможения на основе экспериментальных исследований. Приведены результаты исследований разных авторов относительно степени влияния различных факторов на коэффициент сцепления. Известно, что фундаментальной основой активной безопасности транспортного средства есть его тормозные свойства, а характер торможения зависит от взаимодействия автомобильных шин с дорожным покрытием. Такое взаимодействие в теории автомобиля по обыкновению описывается коэффициентом сцепления, который может быть реализован как в продольном, так и в поперечном направлениях относительно плоскости обращения колес транспортного средства. Экспериментальные исследования качения автомобильного колеса на грани

блокирования показали, что увеличение темпа наполнения тормозной камеры не содействует повышению эффективности торможения, а, следовательно, работа модулятора в режиме интенсивного наполнения тормозной камеры не имеет смысла. Наоборот, как показали экспериментальные исследования, снижение темпа наполнения тормозной камеры повышает эффективность торможения, хотя в начальный момент времени, из-за низкой величины тормозного момента, эффективность несколько снижается. Учет непостоянства значения коэффициента сцепления в автотехнической практике позволит моделировать динамику торможения транспортного средства с системами автоматического регулирования на более высоком уровне и с большей достоверностью. Увеличение массы транспортного средства приводит к снижению сцепляющих свойств его шин, а, следовательно, и к снижению величины замедления, уменьшение его массы наоборот повышает сцепляющиеся свойства между шиной и опорной поверхностью, которая соответственно положительно влияет на эффективность торможения транспортного средства (его замедление повышается).

Ключевые слова: транспортное средство, реализованное сцепление, коэффициент сцепления, автомобильное колесо.

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TECHNICAL ANALYSIS OF ACTIVITIES OF OPERATIVE VEHICLES AT REGULATED CROSSROADS

Issues raised by experts during the performance of judicial auto technical expertise (expert researches) during the technical analysis of actions of drivers of operational vehicles at regulated intersections, are considered.

Keywords: traffic accident, signals of traffic lights, intersections, vehicle, operative vehicle.

Recently, a significant number of traffic accidents (traffic accidents) is taking place with the participation of operational vehicles (vehicles), which include ambulances, road safety services, emergency services, fire brigade, collection services, patrol police, etc. Traffic code of Ukraine determines duties and rights of drivers of vehicles that, while performing an urgent duty, may deviate from the requirements of sections 8 (except for the signals of the regulator), 10–18, , 26, 27 and . art. 28.1 of this code provided turning on a blue or red glare, a special beep and ensuring road safety. 3.2. In the case of approaching a vehicle with a blue flashing light and (or) a special beacon

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turned on, drivers of other vehicles which may create obstacles to traffic shall be obliged to give him the road and to provide an unobstructed passage of the vehicle (and accompanying vehicles). The most common cause of road traffic accidents is the false positives of road users who require in-depth expert analysis and proper assessment by the experts of the automobile in relation to the requirements of MVC and other normative documents. In the course of the pre-trial investigation and in the process of court hearing of cases of accidents, an analysis of the actions of its participants is given special attention. Appointing a judicial automotive expertise, investigators (judges) are waiting for an expert in in-depth research on the actions of vehicle drivers, which is based on specialist knowledge in the field of marine motor vehicles.

As the expert practice shows, during the technical analysis of road transport situations with the participation of the operative vehicles with special signals, namely, when deciding on how a driver of another vehicle had to act, who was exposed to a dangerous situation and when there was a danger for further movement, whether drivers had a technical ability to avoid an accident and whether in their actions the non-compliance with the requirements of the traffic code, which, from a technical point of view, in a causal relationship with the occurrence of an accident, have problems even for specialists with significant let's do expert work. The lack of a unified approach of experts to the solution of these issues leads to incompleteness of the research and groundlessness of the expert opinion, which, in turn, leads to the appointment of additional and repeated auto-technical expertise, the conclusions of which, as a rule, do not confirm the original.

Let’s consider an example of a judicial automotive expertise, a study of cross-collision vehicle at a regulated intersection with the participation of ambulance and a car.

Summary of the circumstances of the accident and the initial data. November 6, 2017, at 16:00 20 min, in the city of Kharkiv at the regulated intersection of the Marshal Konev street and the Netechinskaya embankment collided with an operative vehicle under the control of a driver A., who was moving on the Netechinskaya embankment, with a passenger car under the control of a driver S., moving on the Marshal Koneva street, from right to left with respect to the direction of operation of an operating car.

The road accident took place during the light time of day within the settlement on the regulated intersection of Marshala Koneva street and Netechinskaya embankment (figure). In front of an accident, the operational car was moving on the street. Netechinskaya embankment through the intersection of the street. Marshala Koneva in the direction of Morozhovetskaya embankment and the car was moving on Marshal KonieV. A. street from Kontorskaya street in the direction of lane Chaplyginsky Travel parts of the street Marshala Koneva street and Netechinskaya embankment are intended for the movement of vehicle in two directions. Total width of the travel part of the street. Marshala Koneva is 14.7 m, the traffic flows of the

opposite directions are separated by a double solid road marking line — two lanes for movement in each direction, the boundaries of the stripes of the associated direction are indicated by a single intermittent road marking line. Width of the travel part of Marshal Koneva street for the movement from the Kontorskya street in the direction of lane Chaplyginskogo is 7.0 m (two lanes for traffic), the width of the traffic area for traffic in the opposite direction — 7.0 m (two lanes for traffic), in the middle of the Marshala KoneV. A. street, on the same level as the travel part, contains tram tracks with a total width of 4.7 m for tram traffic in two directions. The condition of the road covering of the travel part of the street. Marshal Koneva and the street. Netechinskaya embankment — dry. There are no tracks of braking and tracks of TP at the accident site.

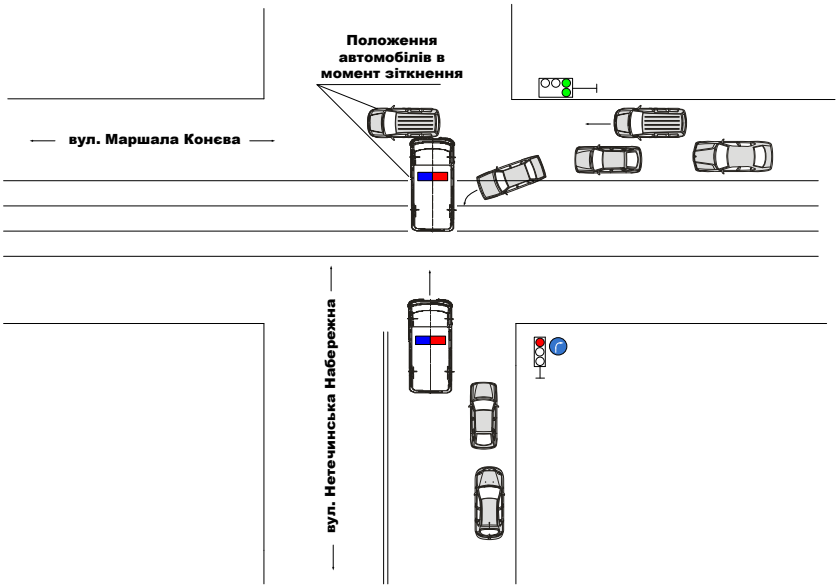


Figure. Scheme of an adjustable crossroads where an accident occurred

From the explanation of the driver of the car C, provided by him at the site of the accident, it follows that he, driving a car, moved on the street. Marshal Koneva from the Poltavskiy Shlyakh street. While crossing a crossroads from the Netechinskaya street; the embankment with the green signal of the traffic light turned on in its direction felt a blow to the left side of the car controlled by it from the official car ambulance. The car in front of the collision moved at the very right lane of its direction at a speed of about 60 km/h.

From the explanations of the driver of the operational car A, it follows that he, while driving the car, was moving to perform an urgent service task

(heavily ill was in the cabin of the car) on the Netechinskaya embankment in the direction of Morozhovetskaya embankment. He traveled to the intersection with a red-light signal with a flash of blue and beige lights in front of his movement in order to ensure road safety. Finishing the maneuver, the driver A., saw that the right at the right lane moves a car, the driver applied emergency braking, but he did not succeed in avoiding the collision. During the movement, the driver A. retreated not only from the requirements of the signal of the traffic light, as well as the traffic sign "Movement to the right",.

When approaching an operating car directly to the intersection of travel units, the driver A. reduces the speed of vehicle which make a left turn from the Marshal Koneva street on the Netechinskaya embankment at the signal of the traffic light, allowing movement in their direction, stop and pass the operational car. TP stop located in the left lane on the driveway of the street. Marshal Koneva stopped at the green signal of the traffic light turned on for their direction, the driver of the SU vehicle had the opportunity to see, as these vehicles were located in the direction which was approaching him, the limits of the same crossroads of the street Marshal Koneva and the street The Netechinskaya embankment, as well as the circumstances that occur there, could not be seen by the driver, because the visibility for him was limited to vehicle, which stopped and missed the operative vehicle.

From the circumstances of the development of the traffic accident mechanism it follows that a collision of an operational car with a car took place at the crossroads regulated by traffic lights. In front of an accident an operational car was moving through the intersection of the Netechinskaya embankment from the Marshala KoneV. A. street with blue-flashing beacons turned on, and at a moment when on the traffic light, set before the crossroads along the street. Netechinskaya embankment, a green signal was turned on, a car in front of an accident was moving along the rightmost stripe of the street. When approaching an operating car directly to the intersection of travel units, the driver A reduces the speed of vehicle, which make a left turn from the Marshal KonieV. A. street on the Netechinskaya embankment at the signal of the traffic light, allowing movement in their direction, stop and pass the operative car. Vehicle stop located in the left lane on the driveway of the street. Marshal Koneva stopped at the green signal of the traffic light turned on for their direction, the driver of the C vehicle had the opportunity to see, as these vehicles were located in the direction which was approaching him, the limits of the same crossroads of the street. Marshal Koneva and the street. The Netechinskaya embankment, as well as the circumstances that occur there, could not be seen by the driver, because the visibility for him was limited to vehicle, which stopped and missed the operative vehicle.

Thus, in accordance with the circumstances of the development of this accident, the following technical assessment of the actions of the driver of the operational car A. and the driver of the car C.

In this traffic situation, the driver of an operating car A. during the performance of an official task while driving the regulated intersection of the street. Netechinskaya embankment and the Marshala Koneva street, in spite of the requirements of the road sign 4.2 “Movement to the right”, had to turn on a blue flashing light and a special beacon, as well as to ensure road safety while driving at the specified intersection. In other words, it should have acted in accordance with the requirements of clause 3.1 of the MVC, which states: “3.1. Drivers of operational vehicles, performing urgent service tasks, may deviate from the requirements of Sections 8 (except the signals of the regulator), 10–18, 26, 27 and 28.1 of these Rules, provided that the blue or red glare beacon and special sound signal and security are switched on traffic. In the absence of the need for additional attention to the attention of road users, a special beep may be turned off”, In this road-transport situation, the technical ability to avoid an accident in the driver's operating vehicle A. was determined by implementing the requirements of paragraph 3.1 of the MVC, for which he had no technical obstacles. Consequently, the actions of the driver of the operational car A., which did not provide road safety and allowed the occurrence of an accident, did not meet the requirements of paragraph 3.1 of the traffic code and from a technical point of view, in a causal connection with the occurrence of an accident.

In this road-traffic situation, a driver of a passenger car, approaching a regulated intersection and detecting a change in the road situation, namely when vehicle made a turn to the left of the left side of the Marshal KonieV. A. street on the Netechinskaya embankment, stopped when the green signal of the traffic light turned on in their direction of motion had to react accordingly: to choose a speed that would allow him to stop the car controlled by him before crossing with the carriageway of the Netechinskaya embankment, because the visibility of the whole crossroads was limited. In this case, the driver of the car C was to give preference to the movement of the vehicle that was moving through a regulated intersection, crossing the passage of the Marshal KoneV. A. street with a blue flashing beacon enabled. In other words, it should have acted in accordance with the requirements of clause 3.2 of the MVC, which states:

“2.3. To ensure road safety, driver should:

b) to be careful to monitor the road situation, to react accordingly to its change, to observe the correct location and fastening of the cargo, to the technical condition of the vehicle and not to be distracted from controlling this means on the road;

32; 3.2. In the case of approaching a vehicle with a blue flashing light and (or) a special beacon turned on, drivers of other vehicles which may create obstacles to traffic shall be obliged to give him the road and to provide an unobstructed passage of the vehicle (and accompanying vehicles).

12.1. While choosing within safe boundaries the driver must take into account the road situation, as well as the peculiarities of the goods being

transported and the state of the vehicle in order to be able to continuously control its movement and to manage it safely.",

In this road-transport situation, the technical ability to avoid an accident in the driver operating vehicle A. was determined by implementing the requirements of paragraph 2.3 "b", 3.2 "b", of the MVC, for which he had no technical obstacles. Since the driver of the C vehicle did not take into account the change in the road situation, namely the fact that the vehicle, who made a turn to the left of the left lane of the Marshal KonieV. A. street on the Netechinskaya embankment, stopped when the traffic signal was turned on in their direction of traffic light, did not choose a speed that would allow him to stop the car controlled by him to the intersection. Because of the limited visibility of the entire intersection, he did not prefer to operate an operational car, therefore, in this road-traffic situation, the driver C did not meet the requirements of paragraphs. 2.3 "b", 3.2 and 12.1 of the MVC and were, from the technical point of view, in a causal connection with the occurrence of an accident.

Summing up the consideration of the above example of the road transport situation, it should be noted that the drivers of the traffic police at the crossing of traffic-regulated traffic intersect, departing from the requirements of the MVC, are fully responsible for road safety. Drivers of cars during traffic through adjustable traffic lights of the intersection should take into account the possible change of the road situation (in our case, it is precisely that the vehicles that made a turn to the left of the left lane stopped with the green signal of the traffic light turned on in their direction of travel), safely choose a speed that would allow them to stop their cars driving to the intersection, since the visibility of the entire intersection can be limited and does not allow an adequate assessment of the situation.

ТЕХНІЧНИЙ АНАЛІЗ ДІЙ ВОДІЇВ ОПЕРАТИВНИХ ТРАНСПОРТНИХ ЗАСОБІВ НА РЕГУЛЬОВАНОМУ ПЕРЕХРЕСТІ

А. В. Лубенцов*, *В. О. Варлахов

Розглянуто питання, які виникають у експертів під час проведення судових автотехнічних експертиз (експертних досліджень) при технічному аналізі дій водіїв оперативних транспортних засобах на регульованих перехрестях.

Ключові слова: дорожньо-транспортна пригода, сигнали світлофора, перехрестя, транспортний засіб, оперативний транспортний засіб.

ТЕХНИЧЕСКИЙ АНАЛИЗ ДЕЙСТВИЙ ВОДИТЕЛЕЙ ОПЕРАТИВНЫХ ТРАНСПОРТНИХ СРЕДСТВ НА РЕГУЛИРУЕМОМ ПЕРЕКРЕСТКЕ

А. В. Лубенцов*, *В. А. Варлахов

Рассмотрены вопросы, возникающие у судебных экспертов во время проведения судебных автотехнических экспертиз (экспертных исследований) при техническом анализе действий водителей оперативных транспортных средств на регулируемых перекрестках.

В последнее время значительное количество дорожно-транспортных происшествий происходит с участием оперативных транспортных средств, к которым относятся автомобили: скорой медицинской помощи, службы

безопасности дорожного движения, аварийно-спасательной службы, пожарной службы, службы инкассации, патрульной службы полиции и др. Правила дорожного движения Украины определяют обязанности и права водителей оперативных транспортных средств, которые, выполняя неотложное служебное задание, могут отступать от требований разделов 8 (кроме сигналов регулировщика), 10–18, 26, 27 и пункта 28.1 этих Правил при условии включения проблескового маячка синего или красного цвета и специального звукового сигнала и обеспечения безопасности дорожного движения. Водители других транспортных средств в случае приближения транспортного средства с включенным синим проблесковым маячком и (или) специальным звуковым сигналом, которые могут создавать ему препятствие для движения, обязаны уступить ему дорогу и обеспечить беспрепятственный проезд указанного транспортного средства (и сопровождаемых им транспортных средств). Наиболее распространенной причиной дорожно-транспортных происшествий являются ошибочные действия участников дорожного движения, которые требуют от судебных экспертов-автотехников их углубленного анализа и надлежащей оценки относительно требований Правил дорожного движения Украины и другой нормативной документации. В ходе досудебного расследования и при судебном рассмотрении дел о дорожно-транспортных происшествиях анализу действий ее участников уделяется особое внимание. Назначая судебную автотехническую экспертизу, следователи (судьи) ждут от судебного эксперта углубленного научного исследования действий водителей транспортных средств, которое основано на специальных знаниях в области судебной автотехники.

Ключевые слова: дорожно-транспортное происшествие, сигналы светофора, перекресток, транспортное средство, оперативные транспортные средства.

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FORENCIC RESEARCH REGARDING INVESTIGATION INTO THE CAUSES OF OPERATING TRUBLES OF INTERNAL COMBUSTION ENGINE TRIBO UNITS

The types, causes of operating troubles of tribo combinations of internal combustion are considered. One of the main causes of this is the rotation of crankshaft plain bearings (bearing shell) due to deterioration of their elements. Adoption of reasonable measures to prevent catastrophic deterioration, such as jamming, deep scratching and gripping will ensure reliable and safe engine operation while running.

Keywords: bushing, crankshaft, rotation, wear and tear, friction torque, scratches, internal combustion engine, tribo unit.

Recently, appeal number of individuals and legal entities to the Kharkiv Research Institute of Forensic Examinations has increased for performing

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forensic research on the causes of operating troubles of internal combustion engines. Analyzing appeals to the Institute in recent years and the conclusions of performed forensic researches, it was found out that one of main causes of operating troubles of internal combustion engines is rotation of crankshaft plain bearings (bearing shell).

Crankshaft bearings are one of the most important parts determining reliability of internal combustion engines. These operate in difficult conditions of variable load, increased slip rates and other adverse factors determining the complex set of requirements to the technology of their manufacture and properties of bearing materials. While internal combustion engine operation, a failure of their normal functioning can happen due to breakdown of crankshaft plat bearings. As the practice of an forensic research performing on internal combustion engines demonstrates the main cause for it is wear and degradation of friction surfaces due to physical and chemical processes occurring in tribo unit, as well as operating and maintenance rules violation of technical operation of the engine or the functioning of filters for lubricant cleaning.

Most characteristic defects of tribo unit parts crankpin — plain bearing are as follows:

— circular scratches, scratches, grasp or strain hardening (Fig. 1);

— wear and destruction of antifriction layer of bearings (Fig. 2);

— wear and tear of plain bearing basis on the entire working surface in case of turning.

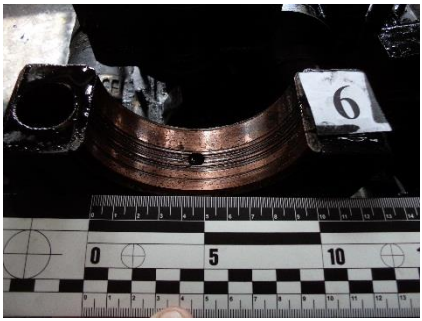


Fig. 1. Large circular scratches due to scratches



Fig. 2. Destruction and chipping of antifriction layer

Scratches on surfaces of tribo unit parts are formed due to the abrasive wear because of ingress of solid particles of contamination to the layer of liquid lubricant separating the friction surface. With increase in concentration and size of the particles in engine oil, the wear of the parts of the tribo unit crankpin — plain bearing increases.

On crankpin engines under study had scratches arising from their hardness. Scratches on crankpins arise due to the fact that particles from deteriorated materials and mechanical impurities ingressed in lubrication have a higher hardness than the hardness of the crankpins and at start-up moments, stop and on the transient operating modes of the engine when oil clearance in tribe units is smaller than particle size, there is their deposition in a soft antifriction layer of plain bearing surface, and later on — intense wear of surfaces of crankpins acting out of the antifriction layer of plain bearing through solid switching on.

The maximum wear of the tribe units occurs in the area of the minimum thickness of the oil layer, so that crankpin ovality of the is formed. As the oil clearance increases, the minimum thickness of oil layer decreases and exceeds the critical (layer thickness when the friction surface of related parts begin to face the peaks of micro asperities). As the wear increases and, correspondingly, the increase of the oil clearance causes an increase in the angle where the minimum thickness of oil layer becomes less critical[1].

The most dangerous are the critical types of wear: jamming, deep scratching and gripping. Scratches on crankpins increase the roughness parameters, increase the speed of joint surface wearing at the moments of start and stop of the engine and the probability of jamming, scratching of crankpins or gripping materials of connected surfaces (Figs. 3–4).

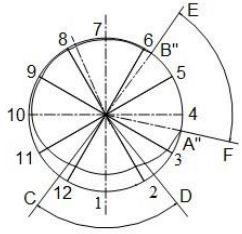


Fig. 3. Diagram of crankpin wear and tear, where AB – theoretical limit of wear; EF – least loaded segment of the crankpin; CD – most loaded area of the crankpin

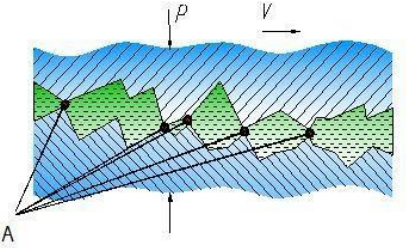


Fig. 4. Scheme of wear formation while crankpin and bearing brass jamming, where P – part squeezing force; V – relative movement speed connected parts; A – contact areas of surfaces

Conditions of jamming, scratching and metal seizure are created during the start-up or of plain bearing turning when the oil does not reach boundary surfaces or while transient engine operating modes, when oil layer thickness is less critical and the surface are faced. This results in a significant increase in the temperature of friction surfaces and the destruction of oil film on friction surfaces. At the

[1] Lucinin B. N. Smirnov V.G. (1980) *Povyshenie dolgovechnosti detalej avtomobil'nyh dvigatelej za schet sovershenstvovanija konstrukcii sistem smazki* [Improving the durability of automotive engine parts by improving the design of lubrication systems]. Moscow : NIIavtoprom, 59 p.

same time, the forces acting in the places of actual contact cause stresses exceeding the metal flow stress leading to plastic deformation of the metal in thin surface layers, besides surface adsorbed oxide, gas films and contamination are destroyed. At the same time, surface imperfection smoothing occurs on friction surfaces that greatly increases the area of their actual contact. With the close convergence of friction surfaces, there is an interatomic attraction of metals, besides at a large area of actual contact formed bonds of metals, similar to interatomic bonds in solid metal that is there is a metal seizure. This results in a sharp increase in the coefficient of friction and intense adhesive wear.

It should be noted that operating trouble of tribe unit: crankpin — plain bearing due to critical types of wear, as a rule, leads to plain bearing turning and deformation of the crankshaft (there is a beating of crankpins due to bending of its axis) (Fig. 5).



Fig. 5. Result of plain bearing turning

Turning causes of crankpin plain bearings *of internal* combustion engine. Operating troubles of tribo units due to bushing turning occur due to low roughness parameters of the bed, an increase in the diameter clearance of plain bearings is more permissible and the transition of the friction mode in the tribo unit with hydrodynamic lubricant to semi-liquid (mixed) and then to boundary, causing increased wear of plain bearings and crankpins, reduction of oil pressure, temperature increase in the friction zone and then to damage, seizing or fusion of the of plain bearing antifriction layer.

The first cause is an elevated friction torque aiming at plain bearing rotation, and a lowered force that holding it (plain bearing is installed with insufficient tension). As a rule, the cases of tension failure are detected very rarely on serial production machines. Typically, a tension failure occurs after an unqualified engine repair when plain bearing selection was performed incorrectly. Under the influence of uneven loads, slipping of the plain bearing leads to its vibration, failure of lubricating film and local adherence. As a result, the plain bearing begins to rotate, and holding the so-called “whisker”, is not able to withstand the torque.

The second cause is an increased friction torque associated with bearing operating mode. While engine operating under rated conditions the bushings operate in conditions of liquid friction. Between the working surface of the bushing and the crankpin there is an oil film preventing direct part interaction.

Friction torque is minimal. Frictional force value is proportional to the load with a constant coefficient of friction. Sometimes oil film integrity can be broken and the coefficient of friction starts to increase. Then, while constant load, the torque is increased and conditions are created for rotation of plant bearings. Increased load reduces thickness of oil film, increasing the risk of its destruction. In this case, more heat is released which leads to local temperature increase in the friction zone. There is a lubricant dilution which leads to a further decrease in the thickness of oil film and increases in occurrence probability of grips in the friction zone.

The process of oil film forming between two contacting and moving parts relative to each other depends on the speed of the mutual movement. In such cases, we can speak of a hydrodynamic mode of friction, when oil film is tucked into the clearance between the interacting parts, disconnecting details. With increasing speed, the film is tightened into the clearance more efficiently (film becomes thicker). But the increase in speed leads to an increase in quantity of heat released during friction. Oil temperature rises and the oil becomes more fluid. This leads to a decrease in film thickness due to oil dilution.

Friction coefficient depends on roughness and accuracy of contacting surface geometry and the presence of foreign particles in the oil (surface irregularities, external particles violate the film integrity which leads to the emergence of zones working in the mode of semi-dry friction). These factors have a particularly strong impact on initial machine operating period during detail functioning. During this operating period, wear and tear of microroughness destroying oil film happens. At this moment, pairs that are most susceptible to overload rub oneself.

Oil viscosity affects the turning point. Greater oil viscosity is, greater is frictional force (friction torque). At the same time, with increasing viscosity, the oil wedge thickness of friction couple grows. On the other hand, viscous oil cannot reach the friction zone with required volumes which leads to decrease in thickness of oil wedge up to its local destruction. Aggregate of different directional processes associated with oil viscosity makes it difficult to unambiguously interpret influence of oil on bushing turning. In this case, defining characteristic is the individual property of the engine oil, as lubricating ability (the strength of adhesion of oil with metal)[1].

In order to prevent scratching and turning of plant bearings while engine assembling, carefully clean the parts, especially oil galleries in cylinder block and crankshaft; increase efficiency of oil purification system in the engine (for example, use paper filtering elements instead of wood pulp elements in a full flow filter, improve the reliability of the filter bypass valve, in the centered windows of the crankshaft install special oil distribution bushes providing improved oil purification for lubrication of two connecting rod bearings on one connecting-rod bearing), reliable performance of the oil

[1] Kamaz motor vehicles: manual maintenance and repair. Moscow : V/O Avtoexport. 415 p.

pump; increase control of geometric parameters of plant bearings before engine assembly; apply high quality oil[1].

Based on performed research it is possible to conclude that main causes of operating trouble of tribe units: crankpin — plain bearing increases are wearing and damage of crankpins. Scratches on crankpins and rotation of plant bearings are observed on all types of engines, regardless of crankpin solidity. As a rule, scratching, chipping and fusion of the antifriction layer of plant bearings lead to crankshaft deformation.

In order to increase reliability and reduce the probability of internal combustion engine operating trouble, it is necessary:

— control content of mechanical impurities in operating engine oil;

— control the values of wear and deviation of crankpin shape, as well as the values of main bearing beating in the presence of scratches on crankpins or plant bearings;

— use wear resistant metal/ceramic coatings that have a higher temperature than the steel seizing temperature, to prevent catastrophic metal wear.

Summarizing the above, it should be noted that provided information is relevant for forensic science institutions and can be used by forensic researchers in the field of motor vehicles while investigation into the causes of internal combustion engine operating troubles[2].

ЕКСПЕРТНЕ ДОСЛІДЖЕННЯ ЩОДО ВСТАНОВЛЕННЯ ПРИЧИН ПОРУШЕНЬ У РОБОТІ ТРІБОВУЗЛІВ ДВИГУНІВ ВНУТРІШНЬОГО ЗГОРЯННЯ

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Розглянуто види, причини порушень у роботі трібовузлів двигунів внутрішнього згоряння. Однією з основних причин цього є провертання підшипників ковзання (вкладишів) колінчастого вала через зношування їх елементів. Прийняття обґрунтованих заходів для запобігання катастрофічних видів зношування, таких як заїдання, глибокі подряпини та схоплювання, дозволить забезпечити надійну й безпечну роботу двигуна в процесі експлуатації.

Ключові слова: вкладиш, колінчастий вал, провертання, зношення, момент тертя, подряпини, двигун внутрішнього згоряння, трібовузол.

ЭКСПЕРТНОЕ ИССЛЕДОВАНИЕ ПО УСТАНОВЛЕНИЮ ПРИЧИН НАРУШЕНИЙ В РАБОТЕ ТРИБОУЗЛОВ ДВИГАТЕЛЕЙ ВНУТРЕННЕГО СГОРАНИЯ

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В последнее время увеличилось количество обращений физических и

[1] Smyrnov V. H. Hryhorev M. A. *Balans raspredelenija masla po potrebiteljam v sisteme smazki avtomobil'nyh dvigatelej. Trudy seminara po ochistke vozduha, masla i topliva s cel'ju uvelichenija dolgovechnosti dvigatelej*. [Oil distribution balance among consumers in the lubrication system of automotive engines]. Proceedings of the workshop on purification of air, oil and fuel in order to increase engine durability. Moscow : ONTI. Issue. 10 books 1. P. 83–89 [in Russian].

[2] Smyrnov V. H. Hryhorev M. A. (1979) *Issledovanie raspredelenija potoka masla v avtomobil'nom dvigatele. Trudy NAMI* [Research on distribution of oil flow in automobile engine. Works of NAMI]. Moscow, Issue. 117 [in Russian].

юридических лиц в Харьковский НИИ судебных экспертиз для установления причин нарушений в работе двигателей внутреннего сгорания. Анализируя заключения проведенных экспертных исследований установлено, что одной из основных причин нарушений в работе двигателей внутреннего сгорания является проворачивание подшипников скольжения (вкладышей) коленчатого вала. Условия возникновения заедания, царапин и схватывания металлов создаются в периоды пуска или проворачивания подшипников скольжения, когда масло не поступает к связанным деталям или на переходных режимах работы двигателя, когда толщина масляного слоя меньше критической и поверхности соприкасаются. Это приводит к значительному росту температуры поверхностей трения и разрушению масляной пленки на них. При этом усилия, действующие в местах фактического контакта, вызывают напряжения, превышающие предел текучести металла, в связи с чем в тонких поверхностных слоях происходят пластические деформации металла, при этом поверхностные адсорбированные окислительные, газовые пленки и загрязнения разрушаются. Одновременно происходит сглаживание неровностей на поверхностях трения, из-за чего значительно увеличивается площадь их фактического контакта. При тесном сближении поверхностей трения возникают межатомные тяготения металлов, при этом на значительной площади фактического контакта образуются связи металлов, аналогичные межатомным связям в сплошном металле — происходит схватывание металлов. Это приводит к резкому увеличению коэффициента трения и интенсивному адгезионному износу трущихся деталей. Следует отметить, что предоставленная информация может быть использована судебными экспертами-автотехниками при исследовании причин нарушения в работе двигателей внутреннего сгорания.

Ключевые слова: вкладыш, коленчатый вал, проворачивание, износ, момент трения, царапины, двигатель внутреннего сгорания, трибоузел.

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RESEARCH ON TECHNICAL STATE OF THE LIGHTING SYSTEM OF VEHICLES USING MODERN EQUIPMENT

The questions concerning expert methods of studying the technical state of the lighting system of vehicles with the use of modern equipment are considered. The order of actions of a specialist, a forensic expert in the inspection and research of lighting systems of vehicles, which allows to establish with a sufficient accuracy its technical condition, using modern devices and methods of research.

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Keywords: forensic expert-motor technician, modern device, device for checking the adjustment of headlights, DSTU.

When investigating traffic accidents (road traffic accidents) that took place during the dark time on an unlit section of the travel section, the investigating authorities are interested in reasons which, from a technical point of view, could lead to the vehicle being hit by a pedestrian, a stationary obstacle, a collision vehicle. This allows us to properly qualify the actions of participants of the traffic accident and establish that in their actions there are non-compliances with the requirements of the current legislation. In order to obtain objective and reliable evidence, the investigating authorities involve a forensic expert or specialist in the possession of appropriate specialist knowledge.

When conducting automotive technical expertise (expert research) regarding the technical condition of the lighting system of vehicles, the expert-engineer faces problems associated with the modern approach to the study of the technical state of the lighting system of vehicles, in particular, using modern devices. The latter is due to their presence and lack of skills in working with this or that modern device. Previously, during the development and approval of a methodology for the study of the technical state of the lighting system of vehicles, for example, the device NIIAT-E-6 was used. Today, this device is out of date and is almost not used by experts in motor vehicles due to operational wear and "moral", aging.

In addition, as expert practice shows, during an expert-motor vehicle survey of a technical state of the lighting system of a vehicle with the further provision of certain conclusions, some questions put to the expert's decision are not disclosed in full and have a very brief response. The latter is due to the fact that the majority of experts-motor technicians, when deciding questions regarding the conformity of the technical condition of the lighting system of a vehicle with certain regulations, compares the expert-defined parameters with the requirements of certain points of the Rules of the road traffic of Ukraine. However, the requirements of the Road Traffic Rules of Ukraine regarding the technical condition of vehicles are based on the requirements of DSTU 3649: 2010, which more broadly specified the requirements for the technical condition of vehicles. In addition, DSTU 3649: 2010 specifies methods for checking a vehicle system, including lighting systems. Therefore, when conducting a study of the technical state of the vehicle systems, in particular lighting systems, it is necessary to use also DSTU 3649: 2010.

With regard to modern devices, through which a more substantiated study of the lighting system of a vehicle can be carried out, there are now devices for checking the adjustment of the headlights of vehicles, which allow

the angle of inclination and intensity of headlamps to be set. One such instrument is the OMA 684D with a digital luxmeters (Fig. 1-2).



Fig. 1-2. Загальний вигляд та складові приладу OMA 684D

When using the OMA 684D, it is necessary to observe a certain order of measurement and processing of the obtained results.

Before starting to check the lighting of the headlights of the vehicle, the following procedures must be performed[1]:

— Install the vehicle on a flat and smooth surface;

— check the air pressure in the tires of the vehicle wheels, which must meet the requirements of the Road Traffic Rules of Ukraine and DSTU 3649: 2010;

— move the vehicle in order to develop a suspension bracket;

— check the position of the regulators of each headlight (if the vehicle is equipped with such a device), or they correspond to the position of normal loading of the vehicle.

After performing these procedures, it is necessary to install the OMA 684D in front of one of the headlights at a distance of 20 to 50 cm from the headlight in a longitudinal direction. The front of the car must be perpendicular to the longitudinal axis of the OMA 684D. The center of the optical element must be level with the center of the headlight.

[1] *Instrukcija po jekspluatacii i obsluzhivaniju pribora s opticheskim jelementom dlja regulirovki luchej sveta far* [Instruction for operation and maintenance of the device with an optical element for adjusting the rays of headlights]. Model 684. URL: http://www.asoforum.ru/document/page669.php?num=7 [in Russian].

Adjusting the beam vertically. First you need to check the dipped beam headlights. To do this, turn on the dipped beam and project a beam of headlights on the panel inside the optical element. When correctly adjusted, the beam must coincide with the horizontal line and the line of inclination at 15 degrees.

Adjusting the beam horizontally. The passing light must also be aligned along the longitudinal axis of the vehicle.

Asymmetric ray. It is necessary to check the accuracy of centering of the illuminated area along the vertical axis and the line of inclination in 15 degrees. The maximum permissible deviation is 1 cm (the equivalent corresponds to a 30–degree mark) to the right.

Symmetrical ray. The symmetrical beam does not have a line of division of regions with a 15–degree inclination. To check its position, it is necessary to use the same method as to determine the position of the beam of the driving beam head, as described below.

Procedure for checking the position of the driving beam headlamp. The main beam headlamps can be switched on by switching the dipped beam or switched on separately. Rays of dipped beam and dipped beam in one beam (reflectors with two types of reflection or two filament lamps in the lamps). It is necessary to check that the positioning is in accordance with the dipped beam control, and the scattering is within the two vertical lines on the instrument panel. However, positioning is not always possible, since the headlight beam control can change the setting of the passing beam, which is more important. If the difference is very noticeable, this indicates that the lamps need to be replaced, because they are the cause of such a malfunction.

Separate headlights for distant light. Verify both the vertical and horizontal installation of headlamps by means of the described method of dipped beam control. If adjustment is required, it can be performed both horizontally and vertically, with adjusting screws.

Removal of indicators of a luxmeter with digital calibration of the scale and indicators of the digital luxmetric. In accordance with the requirements of UNECE Regulation (European Economic Commission of the United Nations), the minimum illumination produced by the passing beam headlamps shall be 6 lux and the maximum — not to exceed 144 lux[1].

The minimum illumination when switching on the driving beam is not less than 32 lux, and the maximum — not more than 240 lux[2].

When checking the intensity of the beam of headlamps it is recommended to use a table of values that meet the requirements of UNECE Regulation (Table 1).

[1] Ibidem.

Table 1

Intensity of ray of light of headlights

Minimum values	Headlights type
6	dimmed headlights
32	for cars with conventional headlights control
48	for cars with halogen bulbs of type H4 lamps
64	for cars with halogen lamps of headlamps such as H1 and H3

If the intensity of the rays does not allow the light of the headlights of these values to be achieved, there is likely to be some malfunction in the electrical system of the vehicle, for example: small degree of charge of the battery, fault of the generator windings, incorrect connection of wires or inconsistency of the diameter of the intersection of wires, mass, defects of contacts on switches, corrosion of contacts on fuses, corrosion or oxidation of contacts, dimming or pollution of headlights.

These malfunctions can be set by visual inspection and (or) using a multimeter if necessary.

According to the methodology of 10.2.04 "Expert examination of lighting system and light signaling of vehicles", as well as the requirements of the Rules of the road of Ukraine and DSTU 3649: 2010 it is necessary to establish the power of light of headlights of the vehicle. In this case, the power of the headlights of the vehicle shall comply with the requirements of the Road Traffic Rules of Ukraine and DSTU 3649: 2010.

According to the pp. 6.1.6.5 DSTU 3649: 2010, the light intensity of each passing beam headlamp shall correspond to the values given in the table 2 [1].

Table 2

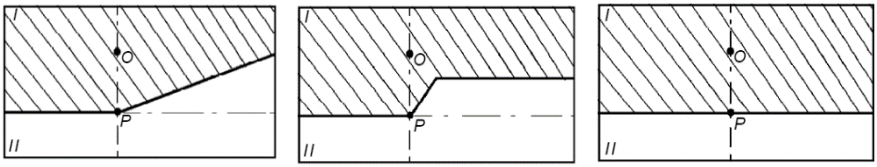
Light intensity of headlights in the mode of "dipped beam",

Type of Light Distribution Headlight	Light intensity, cd in the direction of the output shaft of the headlamp, not more than at the point on the control screen, 5 m away from the headlamp, with a coordinate of 0,1 m vertically downwards from the point P, not less than	
C, CR	800	1600
HC, HCR, DC, DCR	950	2200

[1] Ibidem.

Note. C — headlamps with dipped-beam headlamps; CR — dual-headlamps with incandescent lamps (dipped beam and dipped beam); NC — headlights with halogen light source; HCR — dual-beam headlamps with halogen sources (dipped beam and dipped beam); DC — headlights with gas-discharge sources of dipped-beam light; DCR — dual-mode headlamps with gas-discharge sources (dimmed headlights and distance light).

The locations of the points *O* and *P* depending on the type of light distribution:



a) with a sloping right-hand section of the light-and-dark border

b) with a broken right-hand section of the light-blue border

c) an antifog headlamp or a headlamp designed for use during both left-handed and right-hand traffic

O — point of intersection of the output axis of the headlight with a control screen; P — for the "passing beam", operating headlamp — the point of transition of the light and dark border from the horizontal section to the slope (a, b), for an antifog headlamp or a headlamp designed for use during both left and right hand motion (c) — a point located on the horizontal section of the light-blue border; I — zone of low illumination; II — zone of intensive illumination.

Since the OMA 684D determines the illumination, which is determined in the suite (lux), then the value of the suite in the candelabrum must be converted. For this, the power of light is calculated by the formula

$$I = E \times L^2,$$

where I — force of light, cd; E — illumination, lux; L — distance of photometry — 25 m[1].

Values that appear on the digital scale of the luxmeter correspond to the light ratios obtained with measurements at distances of 25 m as required by UNECE Regulation.

One of the main factors that ensure the highest accuracy of measurements and results obtained is that in accordance with DSTU ISO / IEC 17025: 2006, the OMA 684D device for checking the adjustment of headlamps of vehicles before being put into service must be calibrated at an authorized institution and have Certificate of passing the calibration of the international standard.

[1] *DSTU 3649:2010. Kolisni transportni zasoby. Vymohy shchodo bezpechnosti tekhnichnoho stanu ta metody kontroliuvannia*. DSTU 3649:2010. Wheeled vehicles. Requirements for technical safety and control methods [in Ukrainian].

ДОСЛІДЖЕННЯ ТЕХНІЧНОГО СТАНУ СИСТЕМИ ОСВІТЛЕННЯ ТРАНСПОРТНИХ ЗАСОБІВ ІЗ ВИКОРИСТАННЯМ СУЧАСНИХ ПРИЛАДІВ

А. О. Казаров, П. М. Хоробрих, В. О. Лабінцев

Розглянуто питання, які стосуються експертних методів дослідження технічного стану системи освітлення транспортних засобів із використанням сучасного обладнання. Наведено порядок дій спеціаліста, судового експерта при огляді й дослідженні системи освітлення транспортних засобів, який дозволяє встановити з достатньою точністю її технічний стан, використовуючи сучасні прилади та прийоми дослідження.

Ключові слова: судовий експерт-автотехнік, сучасний прилад, прилад для перевірки регулювання світла фар, DSTU.

ИССЛЕДОВАНИЕ ТЕХНИЧЕСКОГО СОСТОЯНИЯ СИСТЕМЫ ОСВЕЩЕНИЯ ТРАНСПОРТНЫХ СРЕДСТВ С ИСПОЛЬЗОВАНИЕМ СОВРЕМЕННЫХ ПРИБОРОВ

А. А. Казаров, П. Н. Хоробрых, В. А. Лабинцев

При расследовании дорожно-транспортных происшествий, которые имели место в темное время суток, на неосвещенном участке проезжей части, следственные органы интересуют причины, которые, с технической точки зрения, могли привести к наезду транспортного средства на пешехода или неподвижное препятствие, к столкновению транспортных средств. Кроме того, при проведении исследований технического состояния системы освещения транспортных средств, с применением современного оборудования, судебные эксперты-автотехники сталкиваются с проблемами, связанными с отсутствием навыков использования такого оборудования. Также, при решении определенных вопросов, связанных с техническим состоянием системы освещения, поставленные вопросы раскрываются экспертами-автотехниками не в полном объеме, делаются «узкие» выводы, поскольку при исследовании технического состояния системы освещения транспортных средств большинство экспертов-автотехников не обращаются к требованиям ГОСТ DSTU 3649:2010. В статье подробно рассмотрен порядок действий специалистов, судебных экспертов при проведении исследования технического состоянии системы освещения транспортного средства, с использованием современного прибора ОМА 684D. Приведены минимальные значения интенсивности света фар для определенных типов ламп фар согласно требованиям Правил ЕЭК ООН (Европейская экономическая комиссия Организации объединенных наций). Даны рекомендации по использованию ГОСТ DSTU 3649:2010 при проведении исследования технического состояния системы освещения транспортных средств. Для получения значений результатов в канделах, как этого требует ГОСТ DSTU 3649:2010, приведен расчет перевода значений силы света фар из люксов в канделы. Также указаны минимальные и максимальные значения силы света фар для определенных типов светораспределения в соответствии с ГОСТ DSTU 3649:2010. Дана расшифровка типов фар с указанными значениями силы света. Для лучшего восприятия правильности получения результатов исследования показаны изображения расположения контрольных точек в зависимости от типа светораспределения.

Ключевые слова: судебный эксперт-автотехник, современный прибор, прибор для проверки регулировки света фар, ГОСТ.

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RESEARCH ON THE CONCEPT OF "WORK WITH INCREASED RISK", TRANSFER OF EMPLOYEES IN MINING PRODUCTS TO THE PLACE OF WORK EXECUTION

The study of the classification of the workers in mining operations in the course of moving to the place of work during the conduct of judicial engineering and technical examinations on the investigation of the causes and consequences of extraordinary events in the mining industry and underground conditions is given.

Keywords: mining enterprise, mining, hazardous zone, workplace, work with high danger, stay in mine, moving to work place.

The development of coal deposits in Ukraine is carried out in complicated mining and geological conditions in the presence of high parameters of gas formation, mountain pressure, temperature of enclosing rocks, the danger of sudden emissions of coal, rock and gas, the ability of minerals to self-ignition. Being found in mining workplaces (permanent or temporary stay), as well as when moving to the place of performance of works, the hazardous and harmful production factors (hereinafter — NSCHH) may be affected by the worker, which by their origin may be man-made or natural.

Technogenic harmful production factors (hereinafter HPF) under underground conditions include: unsatisfactory condition of mining work (mounting, pedestrian passage, protective equipment, etc.), state of the vehicle and its use not for purpose, state of means of individual and collective protection, communication and signaling equipment, etc.

Natural HPFs that can lead to an emergency include: the state of the rock massif in violation of natural equilibrium, which is accompanied by the effect of difficult predicted manifestations of mining and geological and gas-dynamic factors that pose a danger to the lives and health of workers (isolation and explosions of gas and dust, sudden emissions, mining, collapse, spontaneous combustion of rocks, flooding of mines, etc.).

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The analysis of accidents in the mining industry shows that accidents occur with the miners who are in the mine, not only when performing the task in the workplace, as well as during the descent into the mine, leaving the cage on the working horizon, during the movement of mining operations on foot or underground transport to the workplace.

According to clause 4.25 of DSTU 2293: 2014 work under the conditions of the influence of the HPF or in a situation where there is a need for professional selection, whether it is related to servicing, management, application of technical means of work or technological processes characterized by increased risk of accidents, fires, threats to life and damage, is determined by the work of increased danger. According to Art. 18 of the Law of Ukraine: *On Labor Protection*, the list of such works is approved by the central executive body, which ensures the formation of state policy in the field of labor protection[1]. Paragraph 64 of the list of work with increased danger underground work in mines and mines are classified as high-risk works[2].

In criminal cases of a body that appoints an examination, qualifying the actions of a person under Art. 271 *Violation of the requirements of the legislation on labor protection* or Art. 272 *Violation of safety rules during execution of work with increased danger* of the Criminal Code of Ukraine, it is necessary to take into account that the disposition of these articles is blanket. In this regard, in order to establish the legal qualification of a criminal offense under Art. 272 of the Criminal Code of Ukraine, namely the definition of whether a certain work (type of work) during which an accident occurred, to work with an increased danger, should refer to the special legislative and regulatory acts, which is the List of works with increased danger and the List types of work of high danger[3].

In order to find out the circumstances relevant for a criminal investigation of a crime connected with violation of the requirements of the rules of labor protection and safety at the enterprises of the mining industry, a judicial mining expert examination is appointed, the reason for which is drawn up by the authorized person (body) procedural document — resolution. It lists the issues put to the expert in accordance with the Scientific and Methodological Recommendations on the preparation and appointment of forensic examinations and expert studies[4]. One of the proposed issues is

[1] *Pro okhoronu pratsi : Zakon Ukrainy* [On Labor Protection : Law of Ukraine] dated on: 14.10.1992 № 2695–XII. Bulletin of Verkhovna Rada of Ukraine. 1992. № 49. Art. 668. (as amended: 20.01.2018). URL: http://zakon3.rada.gov.ua/laws/main/2694–12 [in Ukrainian].

[2] *Perelik robit z pidvyshchenoiu nebezpekoiu NPAOP 0.00-4.12-2005: nakaz Derzhnahliadokhoronpratsi Ukrainy* [List of works with increased danger НПАОП 0.00–4.12–2005: Order of Government Oversight on Labor Protection of Ukraine], dated on: 02.12.2014 № 15. URL: http://zakon3.rada.gov.ua/laws/show/z0232–05 [in Ukrainian].

[3] *Perelik vydiv robit pidvyshchenoi nebezpeky: Dodatok 2 do postanovy Kabinetu Ministriv Ukrainy* [List types of work of high danger: Annex 2 to the Resolution of the Cabinet of Ministers of Ukraine] № 1107 (as amended on 07.02.2018). URL: http://zakon5.rada.gov.ua/laws/show/1107–2011 [in Ukrainian].

[4] *Naukovo-metodychni rekomendatsii z pytan pidhotovky ta pryznachennia sudovykh ekspertyz ta ekspertnykh doslidzhen, zatv. nakazom M-va yustytsii Ukrainy* [Scientific and methodological

determined by the qualification of the offense under Art. 272 of the Criminal Code of Ukraine, namely: "Does a specific work belong to the category of work with increased danger?", It can also be described depending on the circumstances of the event in the following wording: "Does the concept of *work with an increased danger* refer to the movement of workers in mining operations to the immediate place of execution of works?",

The time that a person can spend while he / she is pushed to / from the mine, traveling to/from the workplace on foot or to / from a remote place of work in an underground vehicle lasts from 20 minutes to 1-2 hours, which occupies a significant part of working time, during whose worker is in a dangerous zone; a space where there is a possibility of the appearance of the HPF, from which workers must be protected. A particular threat of such factors is created when workers leave the safe place in the event of an emergency (accident) in underground conditions.

For further research on the inclusion of the concept of "work with high risk", movement of workers in mining work to the place of work, consider the definition of the main terms on this issue:

— mining object — a separate mining (mining system) or mining that is part of a mining or other enterprise and is used for the extraction of minerals and other purposes, as well as buildings (structures) that are technologically related to them;

— mining works — a complex of works on the holding, fastening and support of mining and extraction of rocks in conditions of violation of natural equilibrium, the possibility of manifestation of dangerous and harmful production factors;

— mining — a cavity in a rock mass after removal of minerals and other breeds[1];

— mine is a mining enterprise for the extraction of minerals (coal, salt, etc.) in an underground way;

— coal mine is a mining enterprise of high danger; during production activities in underground workings there may be hazardous and harmful production factors, from which employees must be protected[2];

recommendations on the issues of preparation and recognition of forensic examinations and expert studies, approved by the. Order of the Ministry of Justice of Ukraine] dated 08.10.1998 № 53/5 (as amended by the Law of Ukraine on Justice of 26.12.2012 № 1950/5) (as amended on 23.05.2017). URL: http://zakon2.rada.gov.ua/laws/show/z0705–98 [in Ukrainian].

[1] *Hirnychyi Zakon Ukrainy* [Mining Law of Ukraine] dated on: 06.10.1999 № 1127–XIV: Resolution of the Verkhovna Rada of Ukraine (as amended on 12/18/2017). URL: http://zakon3.rada.gov.ua/laws/show/1127–14 [in Ukrainian].

[2] *Pravyla bezpeky u vuhilnykh shakhtakh (NPAOP 10.0-1.01-10): nakaz Derzhavnoho komitetu Ukrainy z promyslovoi bezpeky, okhorony pratsi ta hirnychoho nahliadu* [Safety rules in coal mines (НПАОП 10.0–1.01–10): Order of the State Committee of Ukraine for Industrial Safety, Labor Protection and Mining Supervision] dated 22.03.2010 № 62 (as amended on October 31, 2014). URL: http://zakon3.rada.gov.ua/laws/show/z0398–10/page [in Ukrainian].

— an object of high danger — an object where there is a real threat of an accident and / or an emergency situation of a technogenic or natural nature[1];

— high-risk facility is an object in which one or more hazardous substances or categories of substances are used, manufactured, processed, stored or transported in quantities equal to or more than the prescribed threshold masses, as well as other objects as such, which according to the law is a real threat of a man-made and natural emergency[2];

— work of high danger is work, under the influence of harmful and dangerous industrial factors, or where there is a need for professional selection, or related to the maintenance, management, use of technical means of work or technological processes characterized by an increased risk of accidents, fires, life threats, damage to health, property, environment[3].

— a potentially dangerous object — an object that creates a real threat of an emergency; an object where hazardous radioactive, fire-fighting, chemical and biological preparations are used, produced, processed, stored, stored or transported, objects for the extraction of minerals; hydrotechnical structures, etc.[4];

— dangerous zone is space in which the worker may have a dangerous and / or harmful production factor.

According to the practice of the use of terms, words and phrases in jurisprudence, underground work is the work associated with underground activities (mines, mines, etc.). Consequently, the mine is a potentially dangerous object, an object of increased danger, in which there is a real danger of an accident and / or an emergency of anthropogenic or natural nature, and a stay in the mine, namely: finding in mining and moving them on foot or on an underground transport — is the stay of miners in a dangerous zone where dangerous and / or harmful production factors are possible.

The director of the mine (authorized person) arranges and bears responsibility in accordance with clause 3. 3 chapters IV of the Rules of Security in coal mines for organizing the record keeping of all persons who have descended to the mine and have left it, is also obliged by an order to

[1] *Kodeks tsyvilnoho zakhystu Ukrainy vid 02.10.2012 № 5403-VI. Vidom. Verkhov. Rady Ukrainy* [Code of Civil Protection of Ukraine dated on02.10.2012 № 5403–VI. Bulletin of Verkhovna Rada of Ukraine]. 2013. № 34–35. Art.458 (as amended: 20.01.2018). URL: http://zakon0.rada.gov.ua/laws/show/5403–17 [in Ukrainian].

[2] *Pro ob'iekty pidvyshchenoi nebezpeky : Zakon Ukrainy* [On Extremely Dangerous Objects : Law of Ukraine] dated on: 18.01.2001 № 2245–III. Bulletin of Verkhovna Rada of Ukraine. 2001. № 15. Art. 73 (as amended: 26.04.2014). URL: http://zakon3.rada.gov.ua/laws/show/2245–14.

[3] *Pravyla bezpeky u vuhilnykh shakhtakh (NPAOP 10.0-1.01-10).* [Safety rules in coal mines (НПАОП 10.0–1.01–10)] [in Ukrainian].

[1] *Polozhennia pro monitorynh potentsiino nebezpechnykh ob'iektiv, zatv. nakazom M-va Ukrainy z pytan nadzvychainykh sytuatsii ta u spravakh zakhystu naselennia vid naslidkiv Chornobylskoi katastrofy* [Regulation on monitoring of potentially hazardous objects, approved by the Order of the Ministry of Ukraine for Emergencies and Affairs of Population Protection from the Consequences of the Chernobyl Disaster] of 6.11.2003 № 425. URL: http://zakon0.rada.gov.ua/laws/show/z1238–03 [in Ukrainian].

establish a procedure for the detection of persons who have not left the mine in time and the measures for their search. In Section 4, Section 3 chapters IV of these Rules states that all persons during the descent and stay in the mine should have individual main battery lamps, be in safe protective helmets, overalls and special footwear, have at their disposal and be able to use and apply, if necessary, personal communication equipment. In Section 6, Section 3 chapters IV states that all persons entering the mine must be familiarized with the plan for the elimination of the accident in that part, concerning their place of work, the ways of movement and emergency exits from the mine. The Rules also specify that the workers of the mine must be acquainted with the signature and move to a permanent place of work on the route established by the head of the district (service), to the temporary workplace — together with the head of the work.

According to DSTU 2293: 2014, the workplace is a place of permanent or temporary stay of an employee during the performance of his employment, which is directly or indirectly under the control of the employer; a temporary workplace is a workplace where the employee is less than half or less of his working time.

Given these terms, it should be noted that staying in a mine and moving a worker to a permanent place of work from the beginning of a change, or moving from one place of work to another during a work shift, is the workplace of a temporary stay of an employee during his employment, which is directly or indirectly under the control of the employer, and violations of safety rules in the conditions of the appearance of the HPF in the temporary workplace may be accepted by the persons responsible for the state of c by-products through their actions or inactivity as to, for example, the presence of workers in mining operations, performed without preliminary examination and drawing up an act on such inspection, or a violation of the safety requirements by the workers themselves when moving on mining with the use of a belt conveyor not intended for transportation of people as a vehicle, etc.

Various numerous violations of the Labor Protection Act (LPA)for non-compliance with the requirements of the Safety Rules (SR), the Rules of Technical Operation (RTO) and the technical and design documentation (TDD) may be as follows:

— absence of overlapping of vertical workings or its discrepancy with TPD;

— violation of the rules of use of means of personal protection of respiratory organs;

— violation of the rules of operation and maintenance of machines and mechanisms for the transportation of people by mining;

— lack of communications, operational and warning signaling;

— malfunction of automatic protection and locking devices;

— absence of protective fencing of moving parts of machines and mechanisms;

— improper performance of official duties.

Such acts are in violation of the safety rules when performing work with an increased danger in the workplace or any enterprise. Persons guilty of creating a dangerous action (inaction) that led to an accident or accident are prosecuted in accordance with applicable law. In order to establish the essence of the violation, it should be addressed not only to the list of work with high danger, but also to special sectoral legal acts containing organizational and legal and technical requirements for the safe performance of such works in one or another production.

Thus, when conducting engineering and technical examinations on the investigation of the causes and consequences of extraordinary events in the mining industry and underground conditions, investigating regulatory acts and other sources, one can conclude that underground stay, namely moving to the workplace by mining, is an industrial necessity in which the worker is in a dangerous zone in which he may have a dangerous and / or harmful production factor of natural or man-made origin, therefore the movement of workers in mining works in the place of works belongs to the concept of *work with high-risk*.

ДОСЛІДЖЕННЯ ЩОДО ВІДНЕСЕННЯ ДО ПОНЯТТЯ «РОБОТИ З ПІДВИЩЕНОЮ НЕБЕЗПЕКОЮ» ПЕРЕСУВАННЯ ПРАЦІВНИКІВ У ГІРНИЧИХ ВИРОБКАХ ДО МІСЦЯ ВИКОНАННЯ РОБІТ

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Наведено дослідження щодо віднесення до поняття «роботи з підвищеною небезпекою» перебування працівників у гірничих виробках під час пересування до місця виконання робіт при проведенні судових інженерно-технічних експертиз із дослідження причин і наслідків надзвичайних подій у гірничий промисловості та підземних умовах.

Ключові слова: гірниче підприємство, гірнича виробка, небезпечна зона, робоче місце, роботи з підвищеною небезпекою, перебування в шахті, пересування до місця роботи.

ИССЛЕДОВАНИЕ, КАСАЮЩЕЕСЯ ОТНЕСЕНИЯ К ПОНЯТИЮ «РАБОТЫ С ПОВЫШЕННОЙ ОПАСНОСТЬЮ» ПЕРЕДВИЖЕНИЕ РАБОТНИКОВ В ГОРНЫХ ВЫРАБОТКАХ К МЕСТУ ВЫПОЛНЕНИЯ РАБОТ

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Разработка угольных месторождений в Украине осуществляется в сложных горно-геологических условиях при наличии высоких показателей газообразования, горного давления, температуры вмещающих пород, опасности возникновения внезапных выбросов угля, породы и газа, способности полезных ископаемых к самовозгоранию. Находясь в горных выработках на рабочих местах (постоянного или временного пребывания), а также при перемещении к месту выполнения работ, существует возможность воздействия на работника опасных или вредных

производственных факторов, которые по происхождению могут быть техногенного или естественного характера. Анализ несчастных случаев в горной промышленности показывает, что таковые происходят с горняками, находящимися в шахте не только при выполнении задачи на рабочем месте, а также во время спуска в шахту, выхода из клети на рабочий горизонт, во время перемещения горными выработками пешком или на подземном транспорте к рабочему месту. Проведено исследование, касающееся отнесения к понятию «работы с повышенной опасностью» пребывание работников в горных выработках во время передвижения к месту выполнения работ при проведении судебных инженерно-технических экспертиз по исследованию причин и следствий чрезвычайных происшествий в горной промышленности и подземных условиях. Изучая нормативные документы и инструкции и другие источники относительно регламентации подземных работ, можно прийти к выводу, что пребывание под землей, а именно перемещение к рабочему месту горной выработкой является производственной необходимостью, во время которого работник находится в опасной зоне, когда на него возможно действие опасного и/или вредного производственного фактора естественного или техногенного происхождения, поэтому передвижение работников в горных выработках к месту выполнения работ относится к понятию «работы с повышенной опасностью».

Ключевые слова: горное предприятие, горная выработка, опасная зона, рабочее место, работы с повышенной опасностью, пребывание в шахте, передвижение к месту работы.

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SOME ASPECTS OF VALUE DETERMINING OF DESIGN AND SURVEY WORK WHILE PERFORMING CONSTRUCTION RESEARCH

Analysis of provisions contained in the normative documents regulating the process of determining the cost of design and survey works. Methodological approaches to determining the cost of design documentation development and peculiarities of cost estimating for the cost determination of survey works are considered. List of documents to be investigated while carrying out construction and technical examinations regarding determination of design and survey works cost is determined.

Keywords: design work, design and survey documentation, complexity category, class of consequences, design stage, calculation of construction costs, costing method, method of cost calculation.

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Currently in forensic science activity the task of determining cost of design and survey works becomes more and more relevant and often pre-trial judicial authorities bring up an issue about compliance with the requirements of building code and rules of design and development documentation and the correctness of design work cost calculation. Subject matter of research of such examinations is design and survey documentation, design work cost sheet executive cost sheet. One of the tasks of examination type is to determine the cost of actual developed design and survey documentation, taking into account requirements of regulatory documents. Currently, Ukraine is witnessing the process of developing new normative documents covering a range of normative documents for determining the cost of design and survey documentation. The article deals with the main aspects of determining the cost of design and survey work taking into account the provisions of the existing regulatory documents regulating this process.

Definition of design and survey works cost on the territory of Ukraine is regulated by the requirements of the National Standard DSTU Б Д.1.1-7:2013 (*National Standard of Ukraine*) Rules for determining the cost of design and survey works and examination of design documentation for construction, approved by the Order of the Ministry of Regional Development of Ukraine dated on 08.08.2013 № 374 (hereinafter: DSTU Б Д.1.1-7:2013).

Designing is a complex process that involves the development and concordance of work and technical documentation. Design works is a set of works covering technical side of designed facility aimed at developing draft, design, work and budget documentation, as well as passing the state expertise and coordinating all parts with the controlling bodies. Design work allows avoiding additional financial and time expenditures that could arise during the construction stage.

Rules for cost determining of design work. From 01.01.2014 the DSTU Б Д.1.1-7:2013 was brought into service to replace ДБН Д.1.1-7–2000 (building code) *Rules for determining the cost of design and survey work for construction carried out on the territory of Ukraine* dated on: 01.01.2016 there is a change № 1 to DSTU Б Д.1.1-7:2013 approved by order of the Ministry of Regional Development of Ukraine dated on: 12.11.2015, № 290 and dated on: 01.01.2016 implemented the Change № 2 according to the Order of the Ministry of Regional Development of Ukraine dated on: June 17, № 161.

According to clause 1.2 of the 1 section of DSTU Б Д.1.1-7:2013 this standard is obligatory for construction carrying out with engaging budget funds, public and communal enterprises, institutions and organizations funds, loans granted under state guarantees.

In the 2 section of DSTU Б Д.1.1-7:2013 normative documents referenced in this standard are listed but there is no document DSTU-H Б В.1.2–16:2013: Determination of consequence classes (responsibilities) and complexity category construction projects; although averaged indicators of

project work cost are based on complexity categories according to recommendation letter of the Ministry of Regional Development of Ukraine dated on: June 9, 2017 № 7/15–6135, these indicators are used for the facilities of the corresponding consequence classes.

The 3 Section of DSTU Б Д.1.1-7:2013 contains terms and references to documents defining notion of these terms. Due to the fact that provisions of this National Standard of Ukraine determine the rules for determining the cost of design and survey works and examination of the design documentation for construction, these terms should be applied according to ДБН Д.1.1-7–2000:

Design and survey work cost is the amount of funds necessary for the reimbursement of direct costs and overheads (general and administrative) incurred by project organization while carrying out specified works taking into account standard costs of material and technical resources, free-of-control prices, taxes, dues and compulsory payments as well as economically justified estimated profit.

The cost of a construction project examination is the amount of funds necessary to repay the direct costs and total costs incurred by the expert organization while carrying out these works taking into account costs of material and technical resources, taxes, fees and compulsory payments, economically justified profit and administrative costs.

Main documents that should be used while designing and calculating project documentation in Ukraine are the following normative documents and regulations, as defined by DSTU Б Д.1.1-7:2013:

— Law of Ukraine *On Architectural Activity*;

— Law of Ukraine *On Regulation of City Planning Activity*;

— Resolution of the Cabinet of Ministers of Ukraine dated on May 11, 2011, № 560: On Approval of the Procedure for Approval of Construction Projects and their Examination and Recognition as invalid; certain decisions of the Cabinet of Ministers of Ukraine;

— Procedure for development of project documentation for the construction of facilities (Order of the Ministry of Regional Development of Ukraine dated on May 16, 2011, № 45);

— ДБН А.2.1-1:2008 (2014): Engineering researches for construction;

— ДБН А.2.2–3:2014: Structure and contents of project documentation for construction;

— ДБН А.2.2–6–2008: Composition, content, development procedure, coordination and approval of scientific and project documentation for restoration of immovable cultural heritage objects;

— ДБН В.1.2–12:2008: System of reliability and safety in construction. Construction under conditions of infill. Security Requirements.

These documents contain references to accompanying documents that should be used while designing as well as in addition while applying the calculation method for estimating:

— general guidelines on the use of Collection of prices for survey works for construction (survey works, overhaul, etc.);

— technical parts of price lists for design and research work.

Law of Ukraine dated on 17, 2017, № 1817 On Amendments to Some Legislative Acts of Ukraine concerning Improvement of Regulation of City Planning Activity coming into force from 10.06.2017, canceled categories of construction facilities complexity. According to this law a consequence class (responsibilities) is determined for each facility. In this regard, some of the listed documents will be amended to bring them into line with current legislation. However, before making amendments, it is advisable to use recommendations expressed in the letter of the Ministry of Regional Development of Ukraine dated on: June 9, 2017 № 7 / 15–6135.

The design documentation for construction should comply with law provisions, requirements of building code, standards and rules. It is forbidden to develop design documentation without engineering research that should be performed according to ДБН А.2.1-1:2008: Engineering research for construction on new land plots and while reconstruction and overhaul of facilities without refinements to previously performed engineering researches and facilities instrumental survey. This restriction does not apply to the design documentation developed for reconstruction or overhaul of an existing facility that does not involve any change in its design scheme, additional load on the foundation or developed for a part of a facility under construction (an apartment, a separate civilian premise, etc.).

Submittal paperwork is carried out according to the regulatory documents of the А.2.4 complex: System of submittal paperwork for construction. Source data includes:

— City Planning conditions and restrictions on the development of land plot;

— specifications;

— design tasks (Appendix Б ДБН А.2.2–3:2014);

— other initial data according to the А annex of ДБН А.2.2–3:2014.

Specifications for the engineering provision of facility under construction should include only those works and in those volumes that are necessary for the engineering support of the designed facility under construction.

Consequence class (responsibilities) for facility under construction determined on the basis of the law of Ukraine: On Regulation of City Planning Activity (art. 32), provisions of ДБН В.1.2–14–2009: General principles of reliability and structural safety of buildings, structures, building structures and bases before development of new DSTU-H Б В.1.2–16:2013.

Design stages. According to ДБН А.2.2–3:2014 and the Procedure for the project documentation for facilities under construction, the following design stages are defined:

— Feasibility Study (FS);

— Technical and Economic Calculation (TEC);

— Draft Design (DD);
— Project (P);
— Working project (WP);
— Working documentation (WD).

Selection of the design stage depends on consequence class:

1) for facilities according to consequence class (responsibilities) belonging to facilities with minor consequences (CC1), as well as complexes (structures), including only facilities with minor consequences (CC1), designing is carried out:

— during one stage: the WP stage;

— during two stages: for non-production facilities — the DD stage and for production facilities and linear facilities of engineering and transport infrastructure — the TEC stage and for both — the WP stage;

2) for facilities according to consequence class (responsibilities) belonging to facilities with medium consequences (CC2), according to the customer's decision design can be carried during two or three stages:

— while two stage designing: — the P stage; the WD stage;

— while the three-stage designing: — while the three-stage designing: for non-production facilities — the DP stage or according to the appropriate reasonable customer's decision, the FS stage, and for production facilities and linear facilities of the engineering and transport infrastructure — the FS stage; the P stage P; the WD stage;

3) for facilities with a class of effects (responsibilities) belonging to facilities with significant consequences (CC3), and complexes (buildings) including at least one facility belonging to facilities with medium consequences (CC2) or significant consequences (CC3), designing is carried out in three stages: — for non-production facilities — the DP stage or according to the appropriate reasonable customer's decision, the FS stage, and for production facilities and linear facilities of the engineering and transport infrastructure — the FS stage; the P stage P; the WD stage;

Customer and general designer (designer) can make a well-founded coordinated decision regarding changes in the stages number and design stages.

During facilities overhaul with medium (CC2) and with significant consequences (CC3), as well as complexes (buildings) including facilities with medium (CC2) and significant consequences (CC3), it is allowed to design in one stage — the P stage.

If necessary, to perform preparatory works a customer is obliged in the designing task to provide for a separate section development of submittals — draft of preparatory works that structure and content are determined by ДБН А.3.1-5–2016: Building Technology Management.

Submittals for buildings, structures, buildings and linear facilities of engineering and transport infrastructure, their queues and/or start-up facilities

should be developed taking into account building code and standards operating by the time of transfer to the customer.

Methods of calculating the cost of design and research work.

1. *Method of calculating the cost of design work according to the cost of building works.* According to provisions of DSTU Б Д.1.1-7:2013: it is envisaged to determine the estimated cost of design work from the cost of building works (construction-and-assembling operations) with application of averaged percentage of design work cost and for production facilities according to the cost of building works taking into account the equipment cost.

The calculation basis for non-production facilities and linear facilities of engineering and transport infrastructure is the cost of building works based on results of the 1-9 sections of the consolidated estimated cost of construction is presented at the level of current prices at the time of cost estimate.

Estimated basis for production facilities and certain residential facilities is the cost of building works based on results of sections 1-9 of the consolidated estimated construction cost is presented at current level of prices at the time of calculation and part of equipment cost determined by the percentage in according to the Table 1 of DSTU Б Д.1.1-7:2013 (subject to Changes № 1).

Building cost is determined by the designer according to: cost indicators of equivalents or aggregated averaged indicators of construction cost per unit of power measurement; for non-production facilities using the 0.91 coefficient.

Averaged percentage of project works cost depending on calculation base and complexity of the facility under construction are presented in the A annex of DSTU Б Д.1.1-7:2013 (these indicators are used for corresponding consequence classes): the A1 table — for production facilities; the A 2 table — non-production facilities; the A3 table — for linear facilities of engineering and transport infrastructure: the A.3.1 table — for power supply network facilities the A.3.2 table — for water supply facilities, drainage, heat-and gas supply, etc.; the A.3.3 table — for public roads, etc.

Equivalent selection is carried out on the basis of implemented facilities under construction, which project documentation is approved in the established order. It is necessary to observe the conditions of comparability in order to ensure parameters maximum match of equivalents to parameters of projected facility. In default of corresponding equivalent corresponding to construction conditions (seismic zones, forgery areas, sagging soils, landslides, etc.), according to appropriate substantiation an equivalent is selected and realized under normal conditions.

Project works cost for project construction in severe engineering and geological environment using the indicators of an equivalent realized under normal conditions is determined using indicated method with the application

to the cost of project individual sections, which development of specific normative documents have been established, additional incremental coefficients presented in the Б appendix of DSTU Б Д.1.1-7:2013 (subject to Changes № 1).

Distribution of project works cost is carried out at separate stages of design, in the total cost of project works depending on the number of stages is presented in tables 2 and 3 of DSTU Б Д.1.1-7:2013 and can be specified by the designer together with the customer.

2. 2. Calculation (index) method for calculating the cost of project works. If no possibility to determinate the cost of design and survey and scientific and design works according to the cost of building works, the estimated cost can be determined by the calculation method in the tables of the Ж annex using collections of prices for design and survey work. These collections are informative and can be used to determine the cost of design and survey work for construction using appropriate coefficients and indices in according to tables Ж.1, Ж.2 and Ж.3.

Estimated cost of project works for construction (except overhaul) is determined according to provisions of General guidelines for the application of price lists for project works for construction (issued in 1990) that do not contradict DSTU Б Д.1.1-7:2013. Approximate list of price lists:

— collection of prices for research work for permanent facilities (Moscow, 1982);

— collection of prices for project works for construction (Moscow, 1990);

— collection of prices for project work for buildings and structures overhaul;

— collection of selling prices for technical documentation on elevators (Price list: ПЛ16–1916–90);

— temporary collection of prices for scientific and design works on immovable monuments of history and culture of Ukrainian SSR (ВСЦНПР);

— price list for the development of design documentation for manufacture of non-standardized equipment by design organizations of State Committee for Construction of the USSR;

— price list on the technical documentation development for Automatic Process Control System (excluded from the list of departmental collections according to the Ж.4 table with change № 1 to DSTU Б Д.1.1-7:2013);

— departmental collections: Industry section — mechanical engineering;

— works for overhaul of artificial constructions (approved by the Ministry of Communications of the USSR dated on 23.08.1989);

— price list for performing diving survey of hydraulic structures and laid pipelines (approved by the order of the State Committee for Construction of Ukraine dated on 09.03.2000, № 46);

— pricelist for pre-design works for the electrical network construction (approved by the letter of the State Enterprise *Ukrenergo* dated on 28.11.2002, № 03–34/5367).

Rules for determining the cost of survey work are described in detail in the General Guidelines for the Collection of prices for survey works for permanent facilities (Price Index for Survey Works, Moscow, 1982), as amended since 1990, №22. № 22. The list of expenses included in the collections' prices and those that are taken into account additionally is described there. It is recommended to separately make estimates by type of engineering researches: geological engineering, engineering geodetic, engineering hydrometeorological. At the end of each section for field, office and laboratory work, their total cost is calculated. Additionally, other expenses are taken into account including allowances for terms of works performance other than those taken into account in the price documents. Estimated cost of works is formed as a result of the summing up of the cost of all planned (performed) works, allowances and other expenses.

Calculation method applies to calculations that are made according to labor costs and the cost of man-hours (or man-day).

3. *Method of cost calculation based on reasonable calculations of work complexity and all elements of expenditure.* If it is impossible to determine the cost of design and survey, scientific and design works on the cost of construction and installation work and the cost method (index) method; the estimated cost is determined by the method of cost calculation, based on reasonable calculations of work complexity and all elements of expenditure by compiling the estimate in the form №3 — П (the Д annex to DSTU Б Д.1.1-7:2013).

The production costs of a design and survey organization directly related to execution of design and survey works are calculated according to requirements of Methodological recommendations for the formation of design work cost taking into account accounting provision requirements (accounting standards) approved by Order of the State Committee for Construction dated on 29.03.2002, № 64. Estimated cost of design and survey work take into account estimated profit and taxes, fees, mandatory payments, established by current legislation and not included in the estimated components of these works cost.

The estimated cost of design, survey and research projects, calculated on this method, per one person-day can be compared with the averaged indicators, which are given in the Ж.3 table of the Ж.3 annex of DSTU Б Д.1.1-7:2013, taking into account all expenses related to execution of design and survey work except expenses for travel of business personnel and value added tax. Estimate according the № 3–П form is formed if no direct prices in the collections of prices for project works.

The above information can be used during forensic building technical examinations regarding determination the cost of developing design and survey works.

ДЕЯКІ АСПЕКТИ ВИЗНАЧЕННЯ ВАРТОСТІ ПРОЕКТНО-ВИШУКУВАЛЬНИХ РОБІТ ПРИ ПРОВЕДЕННІ БУДІВЕЛЬНО-ТЕХНІЧНИХ ДОСЛІДЖЕНЬ

Л. Ф. Пугачова, Л. І. Кирилова, С. А. Кириленко

Проаналізовано положення, що містяться в нормативних документах, які регулюють процес визначення вартості проектно-вишукувальних робіт. Розглянуто методологічні підходи з визначення вартості розроблення проектної документації та особливості складання кошторисів з визначення вартості вишукувальних робіт. Визначено перелік документів, який підлягає дослідженню при проведенні будівельно-технічних експертиз із визначення вартості проектно-вишукувальних робіт.

Ключові слова: проектні роботи, проектно-вишукувальна документація, категорія складності, клас наслідків, стадії проектування, розрахунок вартості будівельних робіт, калькуляційний метод, метод калькуляції витрат.

НЕКОТОРЫЕ АСПЕКТЫ ОПРЕДЕЛЕНИЯ СТОИМОСТИ ПРОЕКТНО-ИЗЫСКАТЕЛЬСКИХ РАБОТ ПРИ ПРОВЕДЕНИИ СТРОИТЕЛЬНО-ТЕХНИЧЕСКИХ ИССЛЕДОВАНИЙ

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Проанализированы положения, содержащиеся в нормативных документах, регулирующих процесс определения стоимости проектно-изыскательских работ. Рассмотрены методологические подходы по определению стоимости разработки проектной документации и особенности составления смет по определению стоимости изыскательских работ. Определен перечень документов, подлежащих исследованию при проведении строительно-технических экспертиз по определению стоимости проектно-изыскательских работ. В настоящее время определение стоимости проектно-изыскательских работ на территории Украины регламентируется требованиями Национального стандарта DSTU Б Д.1.1-7:2013 «Правила определения стоимости проектно-изыскательских работ и экспертизы проектной документации на строительство», который введен в действие с 01.01.2014. С 01.01.2016 действует Изменение № 1 к этому DSTU, а с 01.09.2016 введено в действие Изменение № 2. Законом Украины от 17.01.2017 № 1817 «О внесении изменений в некоторые законодательные акты Украины относительно усовершенствования градостроительной деятельности», вступившим в силу с 10.06.2017, отменены категории сложности объектов строительства. Согласно этому закону по каждому объекту определяется класс последствий (ответственности). В связи с чем, в документы, регулирующие порядок определения стоимости разработки проектной документации, будут внесены изменения для приведения их в соответствие с действующим законодательством. В настоящее время, до внесения изменений, целесообразно использовать рекомендации, содержащиеся в письме Минрегиона Украины от 09.06.2017 № 7/15-6135. Класс последствий (ответственности) объекта строительства определяется на основании Закона Украины «О регулировании градостроительной деятельности» (ст. 32), положений ДБН В.1.2-14-2009 «Общие принципы обеспечения надежности и конструктивной безопасности зданий, сооружений, строительных конструкций и оснований» и DSTU-Н Б В.1.2-16:2013 «Определение класса последствий (ответственности) и категории сложности объектов строительства» до разработки нового DSTU.

Ключевые слова: проектные работы, проектно-изыскательская документация, категория сложности, класс последствий, стадии проектирования, расчет стоимости строительных работ, калькуляционный метод, метод калькуляции затрат.

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FORENSIC RESERARCH ON THE QUALITY OF INPUTED METAL DOORS

The obligatory requirements for the quality of manufactured and installed inlet metal anti-shock doors, which should ensure the safety of life, health and property of citizens, are set forth. The basic technical features of these constructions, their characteristics are presented.

Keywords: door block, doors of increased durability, quality, armored structures, operational loads, technical documentation, sealing gaskets, locks, security of the dwelling.

In the case of the appointment of a civil engineering expert, a commonly used product, which today is in high demand, such as the entrance metal shock-proof door with increased strength requirements, used to protect the premises from fractures and unauthorized intrusions, is often subject to the study. In modern conditions, more and more people are keen to change, or if this is a new construction, then install new, high-quality doors. However, when performing such doors, the standards that apply to them are not always fully complied with. Therefore, lately there are disputes over the quality and durability of these structures.

When conducting relevant research, experts are asked for diagnostic, classification and identification tasks. In this connection, as a rule, there is a need for technical documentation. First of all, it should be noted that the door must be manufactured in accordance with the requirements of the relevant standards, normative and technical and design documentation for specific types of doors, which must be approved in accordance with the established procedure.

According to DSTU B B.2.6–12–97 *Doors of high strength. Methods of mechanical tests*:

3.1 The door of the raised mistochnosti — a block of doors, the main bearing structure of which is made of metal and which meets the requirements of protecting apartments and other premises due to unauthorized intrusion.

3.2 Door block is enclosure structure of the doorway for entering the premises, consisting of a box, a door leaf, a wake, closed.

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3.3. Operating loads are static loads in the plane of the door leaf and in the plane perpendicular to it, as well as the cyclic, impact and breakdown loads that the unit door undergoes during operation and which are regulated by the relevant standards.

3.4 Cyclical loads — operational loads from the action of closing doors that are exposed to the door unit during operation.

3.5 Breakdown loads — the load due to unauthorized intrusion into apartments or premises through the door, as a result of which the door unit may cease to perform the functions of the enclosure structure.

3.6 Dismantle of doors — the degree of resistance of the door to breaking load.

3.7 Normal operation of the doors is the operation of the door unit, in which case the door closing and closing is performed with an application of force not exceeding 50 N.

3.8 Normative value of load — the highest value of the load of a certain category of doorstep.

3.9 Correlation value of load — the intermediate value of the load of a certain category of doorstep, which has a correlation with the normative values of the same discharge.

3.10. The category of door-to-dourness is the degree of resistance of the door to the breakdown load of a certain category; is established by the corresponding normative documents on the structure.

3.11 Static effort is a vector parameter of static breaking load.

3.12 Potential energy is the power parameter of a shock breakdown load.

3.13. The term of normal operation of the doors is the time during which the normal operation and the standard number of door closing/closing cycles provide reliable operation without incurring damage or damage.

By their appointment doors are: entrance to apartments or dwellings and entrance to residential premises. They consist of a steel box and steel frame structures. Door cloths are divided into: single and double (also possible to manufacture door cloths of different widths), with the opening of the door leaf inside the apartment or apartment (both in the right and left execution).

Initially, such doors are associated with durability and simplicity of execution (in terms of decoration), but if you look at modern metal doors, then you immediately realize that they can look like part of the interior of the apartment, because there are many options and ways of their facing. Therefore, some people when buying a door first and only notice external factors, while forgetting about the internal content of the product. But only after they are installed, they are faced with such a problem as — sound insulation, corrosion of metal and metal fittings. Hence, complaints about the quality of product manufacturing and its service life begin. Therefore, further questions arise regarding the correctness of the measurements, the quality of the applied metal and the associated installation of materials. Here is a list of

some issues that are put to the experts in the event of appointment of construction and technical expertise in this area of research.

1. Are the measurements (door, doorway) correct?
2. Do the doors made to meet the measurements?
3. Is it possible to install the doors made in the doorway?
4. What thickness of metal is used in the manufacture of doors?
5. Does the thickness of the metal meet the requirements of the metal shockproof doors?
6. Is the installation (installation) of the door box compliant with the rules and regulations for the installation of the product?
7. Does the transportation and storage of doors comply with the specifications that apply to them?
8. Could the non-compliance with the conditions of storage, transportation affect the quality of the installed doors, could their further operation be possible?

Of course, during research, sound insulation must also be checked, as well-finished doors have a good sound insulation. They are also characterized by resistance to fire, falling dust and moisture inside the room. And unlike wooden doors, due to their design, they have a much longer lifetime. They are generally characterized by increased strength and resistance to breakage.

And sometimes, users still complain about the sound insulation of the door leaf, rightly believing that such doors should protect them from strange sounds. Since in the choice of the entrance metal doors the important place is the issue of heat and sound insulation, for this design have good sealants and fill the space between sheets insulation: mineral wool, foamed polystyrene. You can also find systems with a warmed frame right now. This option promises even more protection from the environment. That's just regardless of the quality and quantity of insulation materials, nobody can promise protection from the noise of the elevator. That is, such a situation cannot be recognized as a drawback in the manufactured doors.

But the main criterion for determining the affiliation of metal doors to the class “armored”, is usually the quality of the metal and the total thickness of the sheets in the door package. Also, if you talk about reliability, then you need to pay attention to locks. Today, almost all “armored”, doors have one of two types of locks: cylindrical or lever, but the best option is to install two locks at once: lever and cylindrical types, because it is very difficult to find the key to the lever lock.

In general, doors must be made in accordance with the requirements of DSTU B B.2.6–11-97 *Doors are metal shock-proof. Home-invasion*, normative-technical and design documentation for specific types of doors, which is approved in the established order, with the overall dimensions corresponding to the door openings in the walls. In case of agreement between the customer and the manufacturer, shockproof doors can be manufactured in

other sizes. But even if the doors are not manufactured in standard sizes, it's all the same that technical documentation is required. Because if the doors still show poor quality, a quality study will be difficult, and in some cases it will not even be possible. The technical documentation should reflect the technical characteristics of all elements of the product, and according to subs. 5.1.2. This DSTU Shock Door shall include: a door box; door cloth; wait for locks; wicker; fender (chain); sewing pads; mounting elements and wall mounting.

Of course, the lack of standard techniques somewhat complicates the quality control of door blocks. But still, if you follow the elementary rules, the problem of the dispute will be resolved more quickly. First of all, it should be noted that the following requirements apply to door structures and their closing devices: they should be easy to maintain and repair, metal surfaces should be free of defects (such as trichy, bumps, creep, scratches, dents), gaskets, which are to be used, should be of lightweight, frost-resistant rubber or other materials from the list of permitted by the State Sanitary Inspection bodies in accordance with the requirements of the normative and technical documentation approved in accordance with the established procedure.

During the door inspection, the presence of sealing gaskets should be checked (the conformity of the installation is checked visually), the work of the mobile connections (checked by checking and closing of the door leaves in accordance with clause 3.13 of the State Standard Б В.2.6–12–97).

Checking the buckling of the sealing gaskets in the adjacency is carried out by a paint agent such as, for example, chalk, talc or other substances that can easily be removed after the inspection and do not damage the structure. With a tight-fitting door there is a continuous track, which leaves the paint material applied to the surface of the stretcher.

Checking the surface quality and appearance of the doors is made visually (it is necessary to compare with the corresponding standard sample).

The appearance of the door, the texture, the color of the coating (paintwork or other protective and decorative) must comply with the declared (according to the agreement between the manufacturer and the customer) and be allowed to use by the bodies of State sanitary supervision for use in residential buildings.

As stated in paragraph 2.34 of the ДБН, V.2.2–15–05 *Residential buildings. The main provisions* the entrance doors to the apartments, as well as the elements of fastening and closing must be reinforced construction with seals in the shelters. The general technical specifications of these products are described in detail in DSTU Б В.2.6–11-97. When installing or replacing a door leaf, the requirements of current regulations that take into account fire resistance, insolation, natural light and noise protection should be respected. The apartment doors facing the stairs and marches in the open position should not reduce their estimated width.

Special requirements are imposed on metal shockproof doors, because it is a door of increased ductility, the main bearing structure of which must be made of metal, which meets the requirements of protecting apartments and other premises from acts of unauthorized intrusion and breakage. As the practice suggests, doors of this type do not always meet the technical requirements, although their manufacture should be carried out in accordance with the normative and technical and design documentation for specific types of doors, which must be approved in accordance with the established procedure. The door structure must provide reliable protection of apartments against breaking using special devices and tools such as: ax, scrap, electric drill, car jack, etc., and also exclude the possibility of dismantling of the box, cloth or closing devices from the outside. To do this, it should be steel with a sheet thickness of at least 2 mm. The door box in the installation site of the closing device must have additional reinforcing elements (plates, staples, etc.). In this connection, the cloth with a box should be on three curtains (hinges). The curtains are also manufactured in accordance with the requirements of normative and technical and design documentation, approved in accordance with the established procedure. Places of fastening curtain to the canvas and boxes are provided with additional reinforcing elements (plates, brackets, etc.), in some cases, instead of the middle curtain, a fixing spike can be applied. In order to increase anti-breakdown characteristics in their design, special anti-jamming systems are used. Consequently, when examining, it is necessary to pay attention to the door curtains. Since the usual loops are designed for a weight of about 40 kg, and high-quality “armored”, doors have a greater weight, ie, such curtains may not be able to withstand such a load. And in order to avoid this, loops of reinforced construction are selected for installation of the front door, namely, from a cold-rolled steel with a diameter of 18–25 mm. Such curtains practically do not wear out.

The most notable element of the door is usually a door handle, it plays a very important design role. Therefore, apparently, the basic requirements for the handle are ergonomics and its attractive appearance. If you consider the issue of their spraying, then the best coating for pens is spray with nickel, chromium and brass. But still, the main criterion for choosing door fittings must be reliability and durability.

Installation of doors is an important process. It should be borne in mind: if the installation of doors was carried out on its own, then it automatically cancels the guarantee on the door itself. So, in the future, if problems arise, it will be extremely difficult for an expert to evaluate the work done.

If the measurements of the new door were made correctly, then the doorway should be a bit wider than the size of the door. This is necessary to ensure that there is a space for alignment (which is carried out using the building level) horizontally and vertically, since the doors must be installed vertically. If, however, an error was made in the measurements, then the

narrowed hole needs to be expanded, and the wide hole should be narrowed down by a solid construction solution based on high-grade cement.

In the process of installation and upon its completion, the following items should be checked: gaps between the door leaf and the rack (they should not exceed 2–4 mm), the work of locks and latches, smoothness of opening — door closing, softness of locks. The final step in installing doors is to fill the foam with all voids between the door frame and the wall.

And for the rest I would like to note that the availability of technical documentation on the design of specific types greatly facilitates the work of specialists and, of course, contributes to the final result of research.

The findings, which will be made by experts, will also be affected by the availability of information on the transportation, installation and storage of these products. It should be noted that transportation is possible by all types of transport (of course, if it provides protection against atmospheric precipitation). Storage of door cloths takes place in a fixed position both in horizontal and vertical position.

ЕКСПЕРТНЕ ДОСЛІДЖЕННЯ ІЗ ВИЗНАЧЕННЯ ЯКОСТІ ВХІДНИХ МЕТАЛЕВИХ ДВЕРЕЙ

Н. А. Мацак*, *С. А. Кириленко*, *О. О. Посашков

Викладено обов'язкові вимоги до якості виготовлених і встановлених вхідних металевих протиударних дверей, які повинні забезпечувати безпеку життя, здоров'я та майна громадян. Наведено основні технічні особливості цих конструкцій, їх характеристики.

Ключові слова: блок дверний, двері підвищеної міцності, якість, броньовані конструкції, експлуатаційні навантаження, технічна документація, ущільнювальні прокладки, замки, безпека помешкання.

ЭКСПЕРТНОЕ ИССЛЕДОВАНИЕ ПО ОПРЕДЕЛЕНИЮ КАЧЕСТВА ВХОДНЫХ МЕТАЛЛИЧЕСКИХ ДВЕРЕЙ

Н. А. Мацак*, *С. А. Кириленко*, *О. О. Посашков

Изложены обязательные требования к качеству изготовленных и установленных входных металлических противоударных дверей, которые должны обеспечивать безопасность жизни, здоровья и имущества граждан. Приведены основные технические особенности этих конструкций, их характеристики. Рассмотрена проблема проверки качества, поскольку качество это гарантия надежности и гарантия того, что двери будут служить долго и надежно. Установка качественных «бронированных» дверей не только обеспечит защиту жилья от несанкционированного проникновения, но и поможет изолировать помещение от внешней среды, а поэтому в проблеме выбора входных металлических дверей, важное место занимает вопрос тепло- и звукоизоляции. При выборе хороших металлических дверей следует учитывать каждую деталь. От всех составляющих конструкции непосредственно зависит качество товара и безопасность помещения. В статье поднимается такая насущная проблема как установление качества работ по изготовлению, хранению, транспортировке и монтажу входных металлических противоударных дверей при проведении строительно-технической экспертизы. Приводятся технические характеристики

строительных материалов, которые могут быть при этом использованы. А также указано на то, что очень важно для разрешения споров по этому виду исследований, так это наличие технической документации. В нее должны быть внесены все данные об изделии, вплоть до сведений о транспортировке и хранении, поскольку эти сведения в последующем намного облегчат работу экспертов. Ведь определение качества этого вида изделий является достаточно сложным и трудоемким процессом. При определении качества важны все детали, начиная от качества применяемых строительных материалов, самих работ по изготовлению дверных блоков, их условиями хранения и транспортировки и заканчивая установкой (монтажом).

Ключевые слова: блок дверной, двери повышенной прочности, качество, бронированные конструкции, эксплуатационные нагрузки, техническая документация, уплотнительные прокладки, замки, безопасность помещения.

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METHODOLOGICAL APPROACHES TO INTERNAL INVESTIGATION INTO RAILWAY ACCIDENTS IN UKRAINE AND ABROAD

Methodological approaches to internal investigation of railway accidents in Ukraine and abroad are analyzed which results of are investigated by a forensic scientist while performing railway forensic examination.

Keywords: railway accident, accident, wreck, traffic safety, internal investigation, railway forensic examination.

While providing services for passenger and cargo transportation, there is always a risk of an abnormal situation due to the influence of various factors or people (operators) actions during railway accident (hereinafter: RA). In case of such a situation in Ukraine, an internal investigation is performed, RA causes are detected. Records, evidences and facts detected while this type of investigation is very important and used while performing a research within the bounds of railway forensic examination.

All research methods of causes and factors of influence on RA emergence are reduced to one goal; namely: improving its investigation quality. Results of such internal (special) investigations are used by forensic scientists while performing railway forensic examination.

In different countries, the documents regulating the procedure for performing an internal (special) investigation (hereinafter: SI) are referred differently. In order to study the approaches to performing internal investigation in Ukraine and abroad these documents should be considered.

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In CIS countries, the Baltic States and Ukraine, there are cases while performing investigation are not detected, recorded, all factors including those that are very important affecting the process of interaction between the track and rolling stock. Definition of the same reasons is not sufficiently substantiated and in some cases is not true. In vast majority of internal investigation records there are no major factors that determine sources of increasing collision forces of the rolling stock on the track leading to its derailment. Sometimes while performing railway forensic examination a "purely departmental approach", of executives to an investigation is revealed that is expressed in the distortion of actual derailment circumstances. There have been cases of factual data concealment regarding condition of the locomotive underframe of the rolling stock, speed and traffic conditions of a train, the most important traces on the track and rolling stock by interested persons. There is extremely negative influence on completeness and quality of internal investigations performing. A lack of training and knowledge of some employees regarding interaction between the track and rolling stock, inability and reluctance to carry out necessary calculations. Incorrectly defined circumstances and causes of railway accidents negatively affect the effectiveness of measures taken to prevent such cases in the future.

Upon receipt of information about railway accident occurrence, a committee for performing an internal investigation and determining the causes of its occurrence is created. Committee involve farm experts with a high level of knowledge and considerable experience. Usually committee do not involve employees, whose fault the railway accident occurred. In the structural subdivisions permanent committees can be created. Farm managers should take measures to train specialists participating in these committees. It is necessary perform periodical seminars to exchange experiences regarding the collection and processing of information, calculations, determining causes of railway accidents and designing records of internal investigation. All committee members should be able to use tools for measuring the track, rolling stock, know the rules and allowable deviations from these parameters.

Committees should involve traffic safety auditors of railways and railroad sections. These traffic safety auditors should carry out the quality internal investigation control and reliability of provided information for its performing. Each committee member is personally responsible for the accuracy of provided information to determine cause of the railway accident. While investigating railway accident, committee members are obliged to find out technical, organizational and psycho-physiological (human) causes. The committee should collect the maximum data amount (parameters of railway track, rolling stock, actions of involved workers) even in cases when the derailment cause is quite obvious. While determining railway accident causes, except laws and regulations requirements; the committee can use other sources (technical literature, scientific articles with research results and

conclusions, as well as other information that helps to establish the causes) for calculation goals.

In case of incomprehensible or incomplete interpretation of necessary norms of current laws and regulations, as well as their incomprehensible definition, the committee chairman can apply to developer of these documents to provide him with necessary explanations and comments.

The main committee task is collecting fully reliable data on state of the track, rolling stock and other information relevant to the accident according to existing methods of performing an internal investigation at early stage. Without this, in many cases the cause of an accident (derailment) it will be impossible to identify even for committee of independent experts. In order to determine necessary parameters of cars and locomotives that have derailed; it is necessary to attract track economy experts to inspect and measure track parameters and vice versa involve experts of car and locomotive farms with a reflection of measured parameters in the reports signed by these experts.

Methodological approaches while internal investigation of railway accidents in Ukraine. Let's consider the history of emergence and development of a normative framework for performing an internal investigation of railway accident. At various stages of the formation of official investigation modern system the following normative documents were issued:

– Instruction regarding internal investigation of fires and their consequences in railway transport records: the order of the Ministry of Transportation and Communication of Ukraine dated on 11.07.2016, № 8;

– Instruction regarding procedure of official investigation of railway accidents and traffic safety violations on the railways of Ukraine: Ministry of Transportation and Communication of Ukraine dated on 21.07.2003, №548;

— Guidelines regarding internal investigation of the causes of rolling stock derailment on railways of Ukraine: Order of Ukrainian Railways dated on 21.06.2012, № 194–ЦЗ (hereinafter: Guidelines).

– Interim Procedure of the official investigation of transport events in the public joint stock company Ukrainian Railways, valid from January 1, 2018. (hereinafter: Interim Procedure).

Instructions regarding internal investigation, accounting of fires and their consequences on railway transport is mostly related to a phenomenon such as a fire on a railway transport. This Instruction was insufficient while performing an official investigation of transport accidents.

Instruction on the procedure for internal investigation of transport accidents and violations of traffic safety on railways of Ukraine provides a concept interpretation of internal investigation, list of persons involved in the investigation committee, their actions and the procedure for drawing up a conclusion that required revisions and annexes. Interim Procedure was adopted from January 1, 2018f or replacement of this Instruction. Interim Procedure establishes the order for organizing, performing an investigation,

processing records of an internal investigation of transport accidents and monitoring of elimination of deficiencies leading to railway accident.

These Instructions in a very concise form revealed the concept of internal investigation and generalized the procedure for drawing up its results, but did not disclosed all necessary moments during the investigations, although they are the fundamental basis of the normative framework during performing these investigations. They became the basis for the creation of currently valid Guidelines regarding procedure of internal investigation of causes of the rolling stock derailment on the Ukrainian railways.

Guidelines provide some clarity and consistency in the implementation of actions while performing internal investigation. This document establishes (regulates) the order of organization, performing internal investigation, list of information for the priority reception about: technical condition of the rolling stock, the track, various data provided by the committee heads, official experiments performing, types and mechanisms of derailment, causes of the rolling stock derailment on the rolling stock, definition of causes of the rolling stock derailment (on curved areas of the track, according to the speedometer ribbon, etc.), derailment traces, rolling stock derailment types, auto-brakes performance and the rules of their application, placement of goods in cars, causes for the growth of longitudinal compressive forces in the train, the group side effect on rail wheel of the service trolley and others necessary for performing full as far as possible independent internal investigation.

The information provided on the railway accident is systematized and processed starting from notification about its occurrence. Investigation committee having arrived at railway accident scene (derailment, collision, accident, etc.) performs an inspection and surveys the railway track condition, rolling stock and railway accident scene. In this case, the committee assures that breakage rails rolling stock components, falling parts of rolling stock on the track, support infraction and collapse of cargo, imposition of foreign objects on the track, intentional actions aimed at track damage, rolling stock, structures and devices of the railway, etc. are absent.

Internal investigation begins with the analysis of the conducting mode by a train driver in the district and the compliance of its movement with the established regime card and other normative documents. For this purpose, at derailment scene speedometer ribbon; a certificate about availability and condition of the train brake, the form ВУ-45; wheel report, ДУ-1 form; freight documents for cargo in railroad cars; speed limitation alert form; driver itinerary; technical inspection report of a locomotive or multiple unit, ТУ-152 form should be withdrawn.

Committee for investigating railway accidents carries out the following main actions:

1. Number of derailed rolling stock units, type of cargo and the quantity of goods in the carriages, danger of this cargo for people and the environment is determined according to the wheel report.

2. Information notice about the railway accident is made, the date, time of the incident, its short description, amount of lost cargo, number of dead or injured persons, environmental pollution (if any) are indicated. In order to avoid information distortion about circumstances of the railway accident in the mass media, information message according the committee chairman decision is provided to government officials, law enforcement officers, State Emergency Service of Ukraine, mass media, who can arrive at the scene.

3. Railroad switch position, traffic lights condition (technical condition, traffic lights), signs and traffic signals are verified. Whether there were any witnesses during the derailment is discovered.

4. Locomotive of the first wheel pair of the train locomotive and of individual groups of cars is fixed on the rails. There is a large-scale scheme of the destroyed track section, location of fallen cars and derailed wheel pairs of rails with the drawing of distances between them in meters with reference to kilometer columns or pickets.

Especially important is the fact of fixing the place where locomotive stopped. The mark on the rails about the place of stopping the first wheel pair of the locomotive is performed by the driver or his assistant. If at the time of committee arrival, the locomotive was detached from the train unit one or with a group of cars without such a mark its initial position on the track is restored, based on the location of remaining carriage group and the length of detached group. All these points should be fixed with report and scheme, which reflects the position of the locomotive, the detached group of cars and the group of cars remaining at the time of committee arrival.

5. One of the most important and priority tasks of the committee is the drawing up of a detailed scheme of the location of carriages that have derailed and have not derailed, with reference to the stationing indicating the location of the front and rear carriages (in case cars turn up at 180º). If trucks are separated from the car, their location should be fixed. If wheel wagons are separated from cars, they must be fixed with the number of the wheel coupling in the car according movement direction as well as the left or right sides of the movement.

The accuracy of measuring distances between cars that have derailed and are not derailed; it is permitted within 1 m. Numbers (according to stencils on the body) and the location of the nearest traffic light are fixed on the derailed cars. Of particular importance for determining the cause of the derailment is the designation on the diagram in which side of the train traversed the wheels of cars, which were partially left on the rails with reference to stationing.

6. The place (beginning) of carriages derailment from the rails is fixed, marks of these places are placed on the necks of both rails with vertical lines. The scheme of these traces on the rails with the drawing is up.

7. The inspection report regarding rear end of a train that did not derailed, with the turn-on indication of auto brakes and the position of modes in the air distributors.

8. Weather conditions at the time of derailment are recorded: wind direction relative to the direction of the train; the precipitation availability (snow, rain, fog, dry weather).

9. Involved persons or witness explanations that can be used to establish derailment causes.

10. It is necessary take photographs of derailment scene. While photographing parts of locomotives, cars, track elements, schemes of placing goods in wagons; it is necessary to apply a ruler or some other way to understand the scale. Photos should explain the derailment cause. While adding to the records of internal investigation it is necessary to make explanatory inscriptions on. In case of video recording, imperative voice support is required with detailed explanations on the video record.

11. Getting from the driver and driver assistant written explanations where they should provide specific answers to the following questions:

— Controller position if the train was moving in the traction mode;

— if the train was traveling in braking mode: how braking was performed — driver's brake valve, auxiliary brake valve, using regenerative braking, with or without delivery of sand;

— comments on Continuous Automatic Train Signaling (ALSN), Integrated Train Protection System (CLUB);

— data on the train speed of the before derailment;

— data on availability of impulses from the track during the movement;

— comments on status of the overhead line;

— comments on traffic lights functioning.

Besides, the committee receives written information about the train going from train drivers of counter trains, train dispatcher, station duty officer, level crossing duty officer.

12. The driver should have:

— certificate of the right to control a locomotive;

— conclusion of the driver instructor for the right to work at the station where the derailment occurred;

— service form and comments of the chief instructor on driver duties performance in the train and maneuvering work, to analyze these observations regarding their relation to the derailment.

13. After decoding the locomotive speedometer ribbon, compare the written explanations of the locomotive crew with the data on the decoding of

locomotive speedometer ribbon. Locomotive speedometer ribbon is performed for the entire path of the train (from the departure station to the derailment point). The chief of locomotive, motive power depot issues an information on the time of the locomotive crew during 2 weeks and the rest time before the trip.

14. The technical condition of the locomotive (motive power rolling stock) is checked without derailment. If the locomotive does not derailed, it is necessary to arrange a check of its technical condition for compliance with the requirements of Operating and Maintenance Rules and other laws and regulations. Particular attention is paid to the state of the braking equipment, brakes and the device for measuring the speed of movement (speedometer) functioning. In case of crashes and wrecks, the obligatory check of the serviceability of this device (speedometer) at the stand is performed about what relevant laws and regulations are drawing up.

15. Check multiple unit (MU) condition in case of derailment. The inspection results should be designed with report (report) and signed by officials and committee members who performed the locomotive inspection and by auditors of the railway or railway section who control performing investigation.

16. Check the technical condition of the carriages after derailment. Determine the compliance of these parameters with requirements of laws and regulations. In case of passenger cars derailment, it is additionally necessary to check the technical condition of cars for compliance with their requirements of normative documents during the operation period according to the requirements of Instructions for car inspector. It is necessary to obtain written explanations from the employees of the traction maintenance depot (TMD) where the train preparation for departure was carried out. These explanations should contain answers to the questions concerning cars inspection, test of brakes, elimination of the revealed faults during train preparation for departure and registration of the certificate according to the ВУ-45 form.

17. Check technical condition of the track: line plan, line profile, construction of the railway line, upper structure design of the track and its condition, state of sleepers, etc.

18. Obtain data from transport managers:

— composition station and train departure station;

— station of loading (unloading) the derailed car (cars);

— scheme of train composition and the compliance of this scheme with the points of the Operating and Maintenance Rules other normative documents and a wheel report of the ДУ-1 form;

— the number of trains detained and the total time of their idle time;

— copy of the of shortcomings list detected on the railroad switch of station track during committee monthly surveys (for last 3 months if the derailment has occurred on the railroad switch or a station track).

19. Obtain data prepared and provided by managers and experts in business and marketing:

— schemes of placement and fastening of goods on a rolling stock that has descended from rails;

— availability or lack of cars with overload exceeding established norms (derailed cars that went down and preceding cars);

— availability or lack of cargo collapse and its fall on the track.

20. Obtain from economy managers and experts of the power supply the data on the presence and voltage on the overhead line at the time of derailment (if the derailment occurred on the electrified section), state of traction power supply before the derailment, after the derailment, and the reasons for its disfunction (if such disfunction took place).

21. Obtain data provided by the managers of the alarm and communication department:

— a certificate regarding the state of all signaling control systems on the runway, where derailment occurred;

— data on indicators of means of control over the train movement (Remote information control system, Heated axle box fire alarm monitor, Hardware multi-purpose complex).

22. Upon derailment on a station, the senior electrician together with the station's chief shall draw up a report about the state of the controls for devices of the signaling control systems (buttons, electric point detector, seals, etc.).

The above list does not cover all circumstances that can characterize the derailment cause depending on local conditions but sufficiently substantiated; it will allow answering questions about its causes. Depending on specific conditions and circumstances of the rolling stock, the list of recommended issues can be reduced or supplemented by others.

While investigation, these records should be collected in a separate case. Time-frame of internal investigation into railway accident and the drawing up reports of the internal investigation form are specified in the Interim Procedure.

In the case of an implicit derailment causes or difficulty in collecting information, the committee chairman can apply in writing to the railway management or Ukrainian Railways for permission to extend the investigation period. If the cause of the derailment rolling stock is not determined; the railway head can apply to the committee of independent experts. After internal investigation regarding the causes determination of railway accident scene by the corresponding report is made about the Internal Investigation Form and the Technical conclusion on railway accident causes signed by the

chairman and committee members who performed internal investigation. Investigation records are considered by the railway head. Each committee member who should sign the report but having a remark signs the report making the corresponding entry (about the disagreement).

It necessary to note that the Guidelines use the results of research performed in Russia, Ukraine and other countries of the world, as well as many years of experience of Ukrainian Railways on traffic safety accumulated during the railway accident investigations.

Methodological approaches to performing internal investigation of railway accidents abroad. The procedure and organization of team work in the framework of internal investigation in case of violation of traffic safety in train and shunting in the CIS and Baltics countries was approved in the Instruction on the procedure of joint actions of the railway administrations of the member states of the Community of Independent States of Georgia, the Republic of Latvia, the Republic of Lithuania, the Republic of Estonia concerning internal investigation of traffic safety violations in train and shunting work (approved at the fiftieth meeting of the Railway Transport Council on May 22, 2009, with changes and amendments dated on 22.10.2014). This Instruction specifies a clear list of traffic safety violations when a joint investigation is performed, a procedure for informing about such cases, the order of the investigation and appraisal of the performed investigation. The internal investigation of traffic safety violations is carried out according to this Instruction and domestic laws, laws and regulations in force on the territory of the railway administration where the railway accident occurred.

If consider separately the Republic of Kazakhstan, the Rules of the internal investigation, accounting of fires and their consequences on rail transport of the Republic of Kazakhstan have been approved on May 1, 2004, 2006. № 101-I, setting the internal investigation order, accounting of fires and damages payment caused by fire to health of workers, citizens, property and manufacturing facilities of railway transport organization. In the Republic of Kazakhstan, a work towards increasing the level of knowledge of professionals and improving methods of performing internal investigations is performed. The Ministry of education and science of the Republic of Kazakhstan in 2008 has approved and issued the manual: Investigation methods of railway accidents transport R. P. Ivanitskyi R. Ivanitskiy, 2008) that reflect the General methods of internal investigation on railway transport and several important points as: preparation and appointment of railway technical examination; procedure for the investigation of violations of safety rules leading to trains collision; procedure for investigation of violations of safety rules, leading to the derailment; procedure for identifying and correcting the circumstances contributing to railway accident; performing investigations examples and examinations of incidents on railways of the

Republic of Kazakhstan. Manual regarding Maintenance Regulations and the essentials traffic safety on the railway transport reflecting items performing internal investigation into disasters and accidents was issued in 2011, namely: what are the basic documents required for performing internal investigation; classification of cases of traffic safety violations; procedure of internal investigation; design and results review of internal investigation.

Until 1994 in Russia, an Instruction on the procedure for internal investigation and accounting of railway accidents with people not involved in production, approved by the Ministry of Railways of the USSR approved on December 31, 1984 remained in force. № ЦУО-4260 and an instruction dated on December 25, 1987, № Г-6613у.

Since 1994, an Instruction on the procedure for internal investigation and accounting of railway accidents with people not involved in the production from 08.08.1994 remained in force. This instruction establishes the procedure for internal investigation and accounting of accidents with people in railway transport (including railway mans) not connected with production, as well as the duties of employees and officials of relevant departments and departments of the railway, enterprises, organizations and railway facilities responsible for carrying out this work.

Regulation on the procedure for internal investigation and accounting of transport and other incidents related to violation of traffic regulations and railway transport operation was approved in 2006. This Regulation includes general provisions on an internal investigation of railway accidents and other events related to violations of the rules of safety of traffic and operation of rail transport, order of results design of this investigation, their reporting and accounting.

From the above, it appears that methodological approaches while performing internal investigation into railway abroad and in Ukraine will require certain changes. The same work in the direction of improving these approaches is carried out constantly and this undoubtedly has its positive reflection on research process within the implementation of railway forensic examination.

МЕТОДОЛОГІЧНІ ПІДХОДИ ДО ПРОВЕДЕННЯ СЛУЖБОВОГО РОЗСЛІДУВАННЯ ЗАЛІЗНИЧНОЇ ПРИГОДИ В УКРАЇНІ ТА ЗАКОРДОНОМ

О. В. Джус

Проаналізовано методологічні підходи до службового розслідування залізничних пригод в Україні та закордоном, результати яких досліджуються експертом при виконанні судових залізнично-транспортних експертиз.

Ключові слова: залізнично-транспортна пригода, катастрофа, аварія, безпека руху, службове розслідування, залізнично-транспортна експертиза.

МЕТОДОЛОГИЧЕСКИЕ ПОДХОДЫ К ПРОВЕДЕНИЮ СЛУЖЕБНОГО РАССЛЕДОВАНИЯ ЖЕЛЕЗНОДОРОЖНОГО ПРОИСШЕСТВИЯ В УКРАИНЕ И ЗАРУБЕЖОМ

О. В. Джус

При перевозке железнодорожным транспортом пассажиров и грузов всегда присутствует риск появления нестандартной ситуации, в результате воздействия различных факторов или действий людей (операторов) — железнодорожно-транспортного происшествия. При возникновении же такой ситуации проводятся служебные (специальные) расследования — устанавливаются причины ее наступления. Материалы, показания и факты, устанавливаемые при таком виде расследований, являются достаточно важными и используются при проведении исследования в рамках выполнения железнодорожно-транспортной экспертизы. Все усилия по усовершенствованию методов исследования причин и факторов влияния на возникновение железнодорожно-транспортных происшествий сводятся к одной цели — повышение качества их расследования и предотвращения аварий и катастроф на железнодорожном транспорте в будущем. Существуют определенные методологические подходы при проведении служебного расследования железнодорожно-транспортных происшествий за рубежом (в государствах Балтии, Казахстане, России) и в Украине. Подробно рассмотрен процесс проведения служебного расследования в Украине в соответствии с действующими Методическими указаниями. Работа в направлении улучшения и совершенствования этих подходов проводится постоянно и это бесспорно имеет свое положительное отражение и на процессе исследования в рамках выполнения судебных железнодорожно-транспортных экспертиз. Также необходимо отметить, что грамотное, полное и качественное оформление материалов, представляемых судебным экспертам для выполнения экспертизы, позволит в оптимальные сроки выполнить назначенные судебные железнодорожно-транспортные экспертизы и предоставить обоснованные выводы.

Ключевые слова: железнодорожно-транспортное происшествие, катастрофа, авария, безопасность движения, служебное расследование, железнодорожно-транспортная экспертиза.

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ANALYTICAL DETERMINATION OF DRIVER SAFETY CRITERIA FOR RAILWAY TRANSPORT

The check of conditions of stability from an ascension from the rails of rolling stock according to accepted norms for a car of model 11-286 is executed. The main disadvantages of the used method of calculation and methods of its improvement are given.

Keywords: east of rolling stock rolling stock, accident, accident, traffic safety, stability from the rails east.

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Ability of the railway transport to meet the needs of transportation of passengers, cargo with unconditional security of traffic determines its development and achievement of its leading positions in the transportation market. The most important problem in railway transport is to ensure the safety of the movement of railcars both during the design stage and in the process of their operation. At the same time prevention of transport events on the railways is of paramount importance.

A number of transport events that took place in the railway transport of Ukraine in recent years have served as a serious warning to take urgent measures to ensure traffic safety. Accidents and catastrophes are observed on all the railways of the world and their consequences are human casualties, pollution and significant material damage.

One of the indicators of the interaction of the track and the rolling stock, the failure of which leads to a threat to the safety of the movement, namely, to the east of the rolling stock rolling stock, is a condition for ensuring the stability of the rolling wheel rim on the head of the rail.

Formulation of the problem. The existing scale of the limit values of dynamic indicators, which assesses stability from the east of the rolling stock railways from the rails, is not sufficient for assessing traffic safety and does not take into account the technical condition and individual parameters of the running gear parts of the crew and track. In this connection, there is a need to analyze the criterion of stability of the kinematic pair of “wheel-rail”.

Analysis of previous research. Over a hundred years ago, in 1908 M. Nadal[1] proposed a method for determining the ratio of forces acting on the wheel, in which the east of the wheel from the rail does not occur.

The starting position of the wheel at the same time is considered to be such that its rolling surface has risen above the head of the rail, and the wheel contacts the rail only at a point which is located on the conical part of the ridge. It is accepted that the wheel's orientation from the rail does not occur if the ratio of forces applied to the wheel — the horizontal transverse Y and the vertical Q (under the action of the maximum dry friction force $T = \mu N$) is such that the crest relative to the rail slides down (figure).

[1] Nadal M. J. Locomotives a Vapeur. Collection Encyclopedie Scientifique Bibliotèque de Mecanique Applique et Genie. Paris, 1908. Vol. 186.

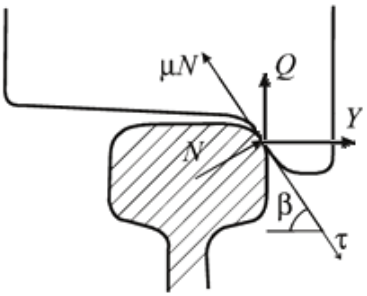


Figure. The forces acting at the point of contact when sliding the crest down relative to the head of the rack

The formula for Nadal has the following form (1):

$$\frac{Y}{Q} < \frac{tg\beta - \mu}{1 + \mu \cdot tg\beta}. \quad (1)$$

In his work, G. Mariee[1] notes that, at a positive angle of impact, an adjustment α should be made, taking into account the coefficient of friction of slip for a non-tire wheel and rail.

The stability condition, taking into account the corrections of Mariee, has the following form:

$$\frac{Y}{Q} < \frac{tg\beta - \mu}{1 + \mu \cdot tg\beta} - \frac{Q'}{Q} \cdot \mu', \quad (2)$$

where Q'is the load on the rail from the unwinding wheel; μ 'is the corresponding sliding coefficient of friction.

In works carried out under the direction of Professor M. F. Verigo, a method was proposed for estimating the resistance of the motion against the east of the wheel from the rails according to a specified formula, which determines the critical value of the ratio of horizontal frame strength and vertical force for a given distribution of vertical loads on the axis of the same wheelbase. The refined condition presented in these works was widely used in experimental work on the definition of the maximum permissible speeds of movement of new and upgraded units of rolling stock.

$$\frac{Y_p}{P_1} \le \frac{P_2}{P_1} \cdot k_1 - k_2 + k_3 \cdot \frac{K}{P_1}, \quad 3)$$

where Y_p — frame strength; P_1, P_2 — forces acting on wheel pairs from the superstructure of the crew; K — half the weight of the wheelset; I_1, I_2 — vertical forces of inertia of the wheel pair; k_1, k_2, k_3 — coefficients.

In this paper,[2] the solution of this problem is carried out using static equations. It is assumed that in the event of a loss of equilibrium, the wheel pair will only move in the direction perpendicular to the axis of the track. Motion along the axis is not considered; consequently, the slip friction forces that arise in this direction are not taken into account. In addition, the components of sliding friction forces that arise in the longitudinal and perpendicular to the axis of the track directions are defined in the most general form and cannot be used for practical application.

[1] Mariee G. (1933) *Vzaimodejstvie puti i podvizhnogo sostava* [Traite du Materiel des chemins de fer] Moscow : Hoszheldoryzdat, 338 p. [in Russian].

[2] Shakhuniants H. M. (1987) Zheleznodorozhnyj put' [Railroad Track]. Moscow : Transport, 479 p. [in Russian].

In this research[1], a combination criterion is proposed for assessing the danger of rolling stock rolling by rolling the wheel on the head of the rail. In this paper, instead of the coefficient of friction, it is proposed to use the ratio of the transverse component of the creep force to the normal reaction at the point of contact.

In the research[2], the energy interpretation of the wheel rolling on the head of the rail is formulated. According to the authors, this is possible when the kinetic energy of the motion that falls on the wheel pair exceeds that work of forces that arise at the point of contact between the surfaces of the ridge and the wheel that they carry when lifting to the height of the ridge. The proposed scheme of estimation of stability of stocks takes into account the influence of the main factors causing the emergence of an emergency state.

This research[3] compares North American, British and European approaches to assessing traffic safety. The authors conclude that British and European criteria apply limit values of forces that are transmitted from the crew to the track. The North American approach does not limit the maximum forces acting on the track, but limits the static load. In the British approach, there are restrictions on both vertical and horizontal forces, and in the European one only horizontal lateral one.

In the research[4] the author proposes to consider the ratio of horizontal transverse force to the vertical for two wheels of the wheel pair, one of which runs on the head of the rail. The Weinstock criterion, in contrast to Nadal's criterion, is less sensitive to the slip friction coefficient. This is especially noticeable at its high values (0,3–0,7), which is very important when conducting the analysis of run tests, where the determination of the value μ is a difficult task.

In the current normative literature, when evaluating the ascent of the wheel from the rail, it is proposed to use the "coefficient of stability against rolling of the wheel on the head of the rail". It is assumed that in the case where the value of this coefficient is less than one, the wheel pair can vanish from the rails. However, in deriving this criterion, many factors were not taken into account, including those such as the wheel rush angle and the duration of the forces.

[1] Pohorelov D. Yu. (2009) *Kriterij dlja ocenki opasnosti shoda podvizhnogo sostava putem vkatyvanija kolesa na golovku rel'sa. Po-dvizhnoj sostav HHI veka: idei, trebovanija, proekty* [A criterion for assessing the danger of rolling stock rolling by rolling the wheel on the rail head. Rolling stock of the XXI century: ideas, requirements, projects], p. 136–138 [in Russian].

[2] Azovskyi A. P. (2007) *Ob ocenke zapasa ustojchivosti kolesa ot vykatyvanija na golovku rel'sa. Bezopasnost' dvizhenija poezdov : sb. statej mezhdunar. konf.* [About estimation of stability of a wheel from rolling on a rail head. Traffic safety: Scientific paper collection of International Academic Conference], p. VI-1–VI-2. [in Russian].

[3] Elkins J. New Criteria for Flange Climb Derailment. 2000 ASME/IEEE Joint Railroad Conference. 2000. P. 1–7.

[4] Weinstock H. Whell Climb Derailment Criteria for Evaluation of Rail Vehicle Safety. ASME Winter Annual Meeting. 1984. P. 34–42;

It should be noted that in the research [1] to determine the safety condition of the ride of a wheel coupling from the rail, the author suggests not to look at one of the individual wheels, and wheelset as a whole, and take it as a solid body. In this case, it is necessary to consider the possible movement of the wheel pair when slipping in the vertical transverse plane of the ridge of the wheel, which runs on the head of the rail.

The purpose of the article. On a concrete example, show the analytical calculation of traffic safety criteria according to accepted norms. Identify the main disadvantages of this method of calculation and how to improve it.

The main research material. The stability of the wheel coupling from the ramps is checked for the most dangerous cases of combining large transverse forces from the racing wheel on the rail and the small vertical load on the wheel. With the simultaneous combination of these forces, for some time, it is possible to roll the ridge of the racing wheel onto the head of the rack and, accordingly, to the east of the railing carriage. A critical combination of a couple of forces acting on a wheel can occur in the following three cases:

— when a shock enters the car into the curve, with the passage of the arrows on the lateral track, with the intense pouring of the trolley when driving with the maximum speed on the straight line of the track, with intensive lateral fluctuations and associated adverse conditions of the interaction of the knee-coupling and track;

— in the case of emergency braking of trains of increased weight at low speed from the main locomotive when passing through the composition of the curve of the section of the track, when significant quasi-static forces of compression of the composition can lead to the displacement of the carriage in the track and the emergence of large transverse forces of interaction between the wheels with the rails and in extreme conditions and to squeezing a lightweight car;

— when passing through a low speed carriage of the transient curve, when there is a power circuit of the scoals located diagonally on the wagon and, as a consequence, the emergence of skew-symmetric forces and deforestation of the wheels.

The method of determining the coefficient of stability of the resilience of the rolling of the crest on the head of the rail for these cases is detailed in the specified standards.

For example, calculate the coefficient of stability reserve from the rails for the empty freight car model 11-286 when rolling the wheel of his wheel

[1] Klymenko I. V. (2015) *Razvitie teoreticheskih osnov i metodov ocenki i povyshenija bezopasnosti dvizhenija podvizhnogo sostava zheleznyh dorog* [Development of theoretical bases and methods of estimation and increase of safety of movement of rolling stock of railways]. Dnepropetrovsk, 284 p. [in Russian].

to the outer rail for the second settlement case. Coefficient of stability of wheel coupling is determined by the formula:

$$k_{ус} = \frac{tg\beta - \mu}{1 + \mu \cdot tg\beta} \cdot \frac{P_в + 2\gamma N \left\{ \left| \frac{\delta_0 L}{l^2} \left(1 + \frac{L}{a}\right) h_п \pm \alpha \frac{L_c}{R} h_a \right| \right\} \frac{1}{2S} \mp 2P_{вст} \cdot \frac{h_р}{2S} \cdot \frac{h_ц}{2S}}{\mu P_в + 2\gamma N \left\{ \left| \frac{_0 L}{l^2} \left(1 + \frac{L}{a}\right) \pm \alpha \frac{L_c}{R} \right| \cdot \left(1 - \mu \frac{h_a}{2S}\right) \mp \mu\alpha \frac{L_c}{R} \left(\frac{h_a - h_п}{S}\right) \right\} \mp 2P_{вст} \cdot \frac{h_р}{2S} \left(1 - \mu \frac{h_ц}{2S}\right)}$$

$$\geq \left[k_{ус}\right], \tag{4}$$

where $P_в$ — vertical load from the trolley to the track, taking into account its depletion with eccentric action of longitudinal forces; $P_{вст}$ — vertical static load from the carriage to the track; γ, α — coefficients of bias; N — estimated longitudinal compressive forces acting on car wagons. Due to the fact that the extrusion process is relatively long, the calculation takes into account the time of action (more than 3 s) of quasi-static forces; they are assumed to be equal: for an empty 4–warp freight wagon — 0.5 MN; 2δ0 — total free cross-section of the frame of the body of the car in relation to the track axis in the direction of the cross-section along the axle (due to the transversal rises of the wheel pairs in the rail track, the frame of the trolley relative to the wheel pairs, the superstring beam in relation to the frame (trolley) and the bolt of the body relative to the superstructure beam) take: for freight cars with loose spring suspension — $2\delta_0$ = 0,05 *м*; 2*l*, 2*L*, $2L_c$ — respectively the base of the car, the distance between the thrust plates of cars and the length of the car on the axes of coupling of carriages, m; a — the length of the car body from the axis of grip to the end of the tail section, for the carriage of CA-3 is taken *a* = 1 *м*; $h_п$, $h_ц$ — respectively, the height of the working plane of the bearings and the axle of the carriage above the level of the rails, *м*; $h_р$ — increase of the external rail in the curve, it is recommended to take $h_р$ = 0,08 *м*; 2*S* — distance between circles of wheel riding, accepted $2S$ = 1,6 *м*; *R* — is the radius of the curve taken *R* = 250 *м*.

In formula (4), the upper signs correspond to the location of the car, when the racing wheel is loaded onto the outer rail, and the lower — to the carriage position when the racing wheel is loaded onto the inner rail.

The coefficients γ and α are determined by the formulas:

$$\gamma = \frac{1}{1 - \frac{N}{N_{ка}}}, \tag{5}$$

$$\alpha = \frac{1 - \frac{N}{N_{ка}}}{1 - \frac{N}{N_{кб}}}, \tag{6}$$

where $N_{ка}$ і $N_{кб}$ are longitudinal critical forces, which lead to relative distortion of wagons and axles of car trailers in terms of *кН*. They are determined from the expressions:

$$N_{\text{ка}} = \frac{C_{\text{г}}}{1+\frac{L}{a}} \cdot \frac{l^2}{L}, \tag{7}$$

$$N_{\text{кб}} = a \cdot C_{\text{г}}, \tag{8}$$

where $C_{\text{г}}$ — horizontal (transverse) rigidity of spring suspension of a cart, *кН/м*^{2}.

While determining $k_{\text{ус}}$, it is necessary to check the condition:

$$\delta_{\text{у}} \tag{9}$$

where $\delta_{\text{у}}$ and $[\delta_{\text{у}}]$ are respectively the elastic transverse deformation of the spring trolley kits under the action of transverse horizontal forces H applied to the carriages and the limiting (in design) transverse unilateral displacement of the superstructure beam relative to the frame of the trolley.

Horizontal force is determined by the formula:

$$H_{1,2}, = \gamma N \left[\frac{\delta_0 L}{l^2}\left(1+\frac{L}{a}\right) \pm \alpha \frac{L_c}{R} \right]. \tag{10}$$

For $\delta_{\text{у}} \geq [\delta_{\text{у}}]$ in the formula (10), instead of δ_0, we must substitute $\delta_0 + [\delta_{\text{у}}]$ and take $N_{\text{ка}} = N_{\text{кб}} = \infty$.

The calculation is made for the empty condition of the car in the presence of an increase in the external rail $h_{\text{р}} = 0{,}15$ *м* і $h_{\text{р}} = 0$.

Now let's go straight to the calculations.

Determine the vertical load from the trolley to the track:

$$P_{\text{в}} = \frac{264{,}87}{2} - \frac{500 \cdot \frac{0{,}08}{2}\left(\frac{7{,}875+6{,}12}{12{,}24} - \frac{7{,}875}{6{,}12} \cdot \frac{1}{1-\frac{6674{,}64 \cdot 6{,}12^2}{500 \cdot 7{,}875}} \right)}{1-\frac{500}{2 \cdot 6674{,}64}\left(1-\frac{7{,}875^2}{6{,}12^2} \cdot \frac{1}{1-\frac{500 \cdot 7{,}875}{6674{,}64 \cdot 6{,}12^2}}\right)} = 109{,}747 \text{ кН}.$$

Determine the horizontal stiffness of the spring by the formula:

$$C_{\text{г}} = \frac{3 \cdot E \cdot d^4}{8 \cdot D \cdot n_{\text{р}}\left[H^2(2+\mu)+3D^3\right]}, \tag{11}$$

where H — height of the spring under the vertical load, m; E — the elastic modulus, $E = 2 \cdot 10^8$ *кН/м*^{2}; μ — is the Poisson module, $\mu = 0{,}28$.

The height of the spring under the vertical load of an empty car is:

$$H = H_{\text{в}} - f_{\text{стп}}, \tag{12}$$

where $H_{\text{в}}$ — the height in the free state of the outer and inner spring $H_{\text{в}} = 0{,}249$ м; $f_{\text{стп}}$ — static spring deflection.

The static deflection of the inner and outer springs will be determined by the formulas:

$$f_{\text{стпв}} = \frac{P_{\text{ст}}}{C_{\text{вн}}}. \quad (13)$$

$$f_{\text{стпзн}} = \frac{P_{\text{ст}}}{C_{\text{зн}}}. \quad (14)$$

$$f_{\text{стпв}} = \frac{6,7}{148,13} = 0,0452\,м.$$

$$f_{\text{стпв}} = \frac{6,7}{331,63} = 0,02м.$$

$$_{\text{в}} = 0,249 - 0,0452 = 0,2038м.$$

$$_{\text{з}} = 0,249 - 0,02 = 0,229\,м.$$

Then the horizontal stiffness of the inner and outer springs will be:

$$C_{\text{гв}} = \frac{3 \cdot 2 \cdot 10^8 \cdot 0,019^4}{8 \cdot 0,105 \cdot 7,6 \cdot \left[0,2038^2 \cdot (2 + 0,28) + 3 \cdot 0,105^2\right]} = 95,86\ кН / м^2.$$

$$C_{\text{гн}} = \frac{3 \cdot 2 \cdot 10^8 \cdot 0,030^4}{8 \cdot 0,172 \cdot 4 \cdot \left[0,229^2 \cdot (2 + 0,28) + 3 \cdot 0,172^2\right]} = 432,9\ кН / м^2.$$

The total horizontal stiffness of the set of springs will be:

$$C_{\text{г}} = 95,86 + 432,9 = 528,76\ кН / м^2.$$

Longitudinal critical forces that lead to relative distortion of wagons and axles of car trailers in the plan, we define by formulas (7) (8):

$$N_{\text{ка}} = \frac{14 \cdot 528,76}{1 + \frac{7,835}{1}} \cdot \frac{6,12^2}{7,835} = 4005,38\ кН.$$

$$N_{\text{кб}} = 1 \cdot 14 \cdot 528,76 = 7402,64\ кН.$$

The coefficients γ and α are determined by the formulas (5) (6):

$$\gamma = \frac{1}{1 - \frac{500}{4005,38}} = 1,14.$$

$$\alpha = \frac{1-\frac{500}{4005,38}}{1-\frac{500}{7402,64}} = 0,938.$$

We will check the fulfillment of the condition:

$$\delta_y < [\delta_y].$$

To do this, we first define the horizontal force applied to the pentagram of the first and second trolleys:

$$H_1 = 1,14 \cdot 500 \cdot \left[\frac{0,025 \cdot 7,835}{6,12^2} \cdot \left(1 + \frac{7,835}{1}\right) + 0,938 \cdot \frac{8,835}{250} \right] = 45,23\ кН.$$

$$H_2 = 1,14 \cdot 500 \cdot \left[\frac{0,025 \cdot 7,835}{6,12^2} \cdot \left(1 + \frac{7,835}{1}\right) - 0,938 \cdot \frac{8,835}{250} \right] = 7,44\ кН.$$

We find an elastic transverse deformation of spring sets of trolleys under the action of transverse horizontal forces $H_{1,2}$:

$$\delta_1 = \frac{45,23}{14 \cdot 528,76} = 0,006.$$

$$\delta_2 = \frac{7,44}{14 \cdot 528,76} = 0,001.$$

Since $[\delta_y] = 0,024$, the condition is satisfied (0,006 < 0,24, 0,001 < 0,24).

$$k_{yc} = \frac{109,747 + 2 \cdot 1,14 \cdot 500 \cdot \left(\left[\frac{0,025 \cdot 7,875}{6,12^2} \cdot \left(1 + \frac{7,875}{1}\right) \cdot 0,801 + 0,938 \cdot \frac{8,835}{250} \cdot 1,04 \right] \right) \cdot \frac{1}{1,6}}{0,25 \cdot 109,747 + 2 \cdot 1,14 \cdot 500 \cdot \left(\left[\frac{0,025 \cdot 7,875}{6,12^2} \cdot \left(1 + \frac{7,875}{1}\right) + 0,938 \cdot \frac{8,835}{250} \right] \cdot \left(1 - 0,25 \cdot \frac{1,04}{1,6}\right) \right)}$$

$$\frac{-2 \cdot 132,435 \cdot \frac{0,15}{1,6} \cdot \frac{1,485}{1,6}}{-0,25 \cdot 0,938 \cdot \frac{8,835}{250} \cdot \frac{1,04 - 0,801}{1,6}) - 2 \cdot 132,435 \cdot \frac{0,15}{1,6} \cdot \left(1 - 0,25 \cdot \frac{1,485}{1,6}\right)} \cdot \frac{1,732 - 0,25}{1 + 0,25 \cdot 1,732}$$

$= 1.72.$

Consequently, the condition of stability from the rising of the rails for the car model 11-286 in the second settlement case is performed (1.72> 1.2).

However, the values obtained are not sufficiently precise. Calculations according to the specified norms do not allow to take into account the parameters of the rail track, namely the inequalities in both the vertical and horizontal plane that occur during the operation. Also, calculations of traffic safety criteria according to these norms do not allow to determine the effect of wear of wheel

pairs and rail track. In addition, the excess of the allowable value of the coefficient of stability of the wheelbase from the east does not always lead to the rolling of the ridge of the wheel on the head of the rail. This is due to the fact that the ratio of the vertical load to the horizontal force may exceed the permissible value, while the clearance between the crest and the rail is not yet exhausted.

Conclusions

1. For a car of model 11-286, an inspection of the stability conditions from the ramp was performed.

2. The coefficient of stability from the ramp from the rails for the car of this model for the second calculation case was 1.72, which is more than the permissible value (1.2).

3. Calculations according to accepted norms do not allow to take into account the faults of the rail track and the loss of rolling stock rolling stock that is in service.

4. Creation of mathematical models of cars will take into account the main features of the design of the running parts, the wear of wheel pairs, rail track and set the time when the gap between the wheel's crest and rail is exhausted (there is a dynamic interaction). It is also necessary to analyze European experience in determining the criteria for traffic safety.

АНАЛІТИЧНЕ ВИЗНАЧЕННЯ КРИТЕРІЇВ БЕЗПЕКИ РУХУ НА ЗАЛІЗНИЧНОМУ ТРАНСПОРТІ

А. В. Батіг

Виконано перевірку умов стійкості від сходу з рейок рухомого складу за прийнятими нормами для вагона моделі 11-286. Наведено основні недоліки використаного методу розрахунку та способи його вдосконалення.

Ключові слова: схід з рейок рухомого складу, катастрофа, аварія, безпека руху, стійкість від сходу з рейок.

АНАЛИТИЧЕСКОЕ ОПРЕДЕЛЕНИЕ КРИТЕРИЕВ БЕЗОПАСНОСТИ ДВИЖЕНИЯ НА ЖЕЛЕЗНОДОРОЖНОМ ТРАНСПОРТЕ

А. В. Батиг

Исследование условия устойчивости подвижного состава от схода с рельсов было выполнено многими зарубежными и отечественными учеными, каждый из которых предложил свои методы и подходы к его расчету. Каждый из предложенных методов и подходов имеет свои преимущества и недостатки, которые детально проанализированы. Кроме этого, метод определения коэффициента запаса устойчивости от схода с рельсов подвижного состава приведен в принятых в настоящее время нормах по расчету и проектированию вагонов колеи 1520 мм, в европейских нормах. Однако, расчеты по нормам, которые используются для железных дорог колеи 1520 мм, не дают возможности учитывать параметры рельсовой колеи, а именно, неровности как в вертикальной, так и в горизонтальной плоскости, которые встречаются в процессе эксплуатации. Также расчеты критериев безопасности движения по этим нормам не позволяют установить влияние износа колесных пар и рельсового пути. Кроме

этого, превышение допустимого значения коэффициента запаса устойчивости колесной пары от схода с рельсов подвижного состава не всегда приводит к вкатыванию гребня колеса на головку рельса. Это объясняется тем, что соотношение вертикальной нагрузки к горизонтальной силе может превысить допустимое значение, но при этом зазор между гребнем и рейкой еще не будет исчерпан. Выполнена проверка условий устойчивости от схода с рельсов подвижного состава по принятым нормами для вагона модели 11-286. Приведены основные недостатки использованного метода расчета и способы его усовершенствования. Создание математических моделей вагонов позволит учитывать основные особенности конструкции ходовых частей, износ колесных пар, рельсового пути и устанавливать момент времени, когда исчерпывается зазор между гребнем колеса и рельсом (возникает их динамическое взаимодействие). Также следует проанализировать европейский опыт в определении критериев безопасности движения.

Ключевые слова: сход с рельсов подвижного состава, катастрофа, авария, безопасность движения, устойчивость от схода с рельсов.

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USE OF ADDITIONAL CRITERION TO ASSESS THE SAFETY OF MOVEMENTS FROM THE ROLLING OF WHEELS FROM RIGHT TO FORENSIC RAILWAY TRANSPORT EXAMINATION

Research on the additional criterion for assessing the safety of motion was conducted, according to which the ascent of the wheel from the rail was analyzed by the actual lifting of the comb of the wheel on the head of the rail. The noted feature will allow to study more detailed the development of the mechanism of the railway accident.

Keywords: interaction of the track and the rolling stock, the east of the wheel with the rail, traffic safety, the mechanism of the railway accident.

Derailing of the rolling stock of railway transport is an event that led to the loss of the interaction of at least one wheel of the rolling stock of rail transport with a rail as a result of wheel displacement from its normal position relative to the head of the rail[1]. It should be noted that the primary task of the

[1] *Pro zatverdzhennia Instruktsii z orhanizatsii vidbudovnykh robit pry likvidatsii naslidkiv transportnykh podii na zaliznytsiakh Ukrainy : nakaz Ministerstva transportu Ukrainy* [On approval of the Instruction on the organization of rehabilitation works in the elimination of the consequences

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investigation is to establish a specific technical reason for the ascent. The level of safe operation of the rolling stock on the railways is determined, mainly, by the availability of the stability of the rail crew. Therefore, the study of the issue of the east of railcars from the railroad is of great importance in many experimental and theoretical studies.

Formulation of the problem. The interaction of the track and rolling stock during its operation is one of the most important problems of railway transport in Ukraine. Important importance is acquired in scientific research concerning the issue of stability of rolling stock during its movement both in direct and in curved sections of the railway track. In the process of development of transport science, a number of methods have been developed to determine the possibility of an ascent of wheel wheels from a rail track, which, to a greater or lesser extent, take into account the features of their interaction. However, the methods laid down in the calculations are different. However, the problem is complicated by the lack of sufficient experimental data that would allow to check the adequacy of the models included in the calculations. Frequent is the situation of the use of outdated methods in determining the possibility of climbing the wheel from the rail, as well as ignoring modern approaches to their calculation.

Analysis of recent researches. It is accepted that the wheel's orientation from the rail does not occur if the ratio of applied forces to the wheel — the horizontal transverse $Y_н$ and the vertical V (under the action of the maximum force of dry friction is such that the $T = \mu N)$ crest relative to the rail will slide downwards (Fig. 1).The above condition is expressed by such inequality[1]:

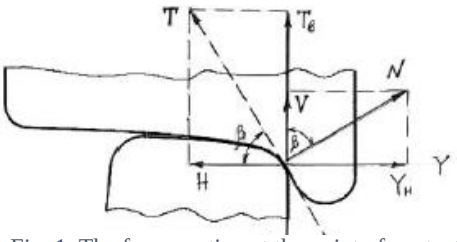


Fig. 1. The forces acting at the point of contact when sliding the crest down relative to the head of the rail

$$\frac{Y_н}{V} < \frac{tg\beta - \mu}{1 + \mu \cdot tg}, \quad (1)$$

where μ — coefficient of friction; N – normal reaction of the rail at the point of contact; β — angle of inclination of creature crest horizontally.

In the current normative literature, when assessing the ascent of the wheel from the rail, it is proposed to use the “coefficient of stability of the rolling of the wheel on the head of the rail.”, It is assumed that in the case where the value of this coefficient is less than one, the wheel pair can vanish from the rails. However,

of transport events on the railways of Ukraine : the order of the Ministry of Transport of Ukraine] dated 27.04.2001 № 258. URL: zakon.rada.gov.ua/go/z0422–01 [in Ukrainian].

[1] Nadal M. J. Locomotives a Vapeur. Collection Encyclopedie Scientifique Bibliotèque de Mecanique Applique et Genie. Paris, 1908. Vol. 186.

in deriving this criterion, many factors were not taken into account, including those such as the wheel rush angle and the duration of the forces.

It is also worth noting the approaches of E. M. Sokol, which are used in conducting forensic rail-transport examinations[1].

In our opinion, for rolling the ridge of the wheel on the head of the rail, it is necessary to perform at least two conditions: necessary and sufficient.

An analytical expression of the required condition of rolling the ridge of the wheel on the head of the rail has the form:

$$P_1 < P_1^*, \tag{2}$$

where P_1 — actual load on the wheel; P_1^* — load on the wheel at which the process of rolling begins.

$$P_1^* = \frac{Cb_2 + Y_p r - Gl}{b_1 + b_2}, \tag{3}$$

where $C = (P_1 + P_2)$ — static load on the axle of the wheel pair; r — radius of the wheel; G — weight of the wheelset; Y_p –frame force.

The sufficient condition for rolling the wheel on the head of the rail has the following form:

$$2l \cdot \sin\theta_{\max} = f, \tag{4}$$

where $\theta_{\max}$ — the value of the angle at which the wheel's crest is already on the surface of rolling the head of the rail; — the height at which the wheel should rise, so that its crest is on the surface of rolling the head of the rail.

According to European standards BS EN 14363: 2005, the rolling stock is safe from rails, if condition (5) is carried out at each stage of the test:

$$\left(\frac{Y_н}{V}\right)_{\max} \le \left(\frac{Y_н}{V}\right)_{\lim}, \tag{5}$$

where $Y_н$ — horizontal transverse force; V — vertical force acting from a rail to a wheel.

Also, an additional criterion is used to assess the safety of the movement, according to which the east is analyzed by the actual rise of the ridge of the wheel on the head of the rail[2].

Article Purpose. Explore an additional criterion for assessing traffic safety, which will allow more detailed consideration of the development of the mechanism of the traffic accident, to determine more precisely its direct technical cause.

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[1] Sokol Ye. N. (2004) *Shody s rel'sov i stolknovenija podvizhnogo sostava (sudebnaja jekspertiza. Jelementy teorii i praktiki)* [Rolling Stoc derailment and collisions. (Forensic science. Elements of Theory and Practice)]. Kyiv : Transport of Ukraine, 386 p. [in Ukrainian].

[2] Kuzyshyn A. Ia. Batih A. V. (2017) *Pobudova mekhanichnoi modeli vahona dyzel-poizda DPKr-2 ta yii osoblyvosti. Visn. Dnipropetr. nats. un-tu zalizn. transp. im. akad. V. Lazariana* [Construction of the mechanical model of the diesel train DPKr-2 and its features. Bulletin Dnipropetrovsk State University of Railway Transport named after V. Lazarian]. Dnipropetrovsk, Issue № 6 (72). P. 20–30. doi.10.15802/stp2017/117936 [in Ukrainian].

The main research content. In order to determine the possibility of an ascent of the wheel from the rail, there are the following criteria: the coefficient of stability of the wheel's ascent from the rail, the coefficient of stability from the overturning of the car, the coefficient of stability of the track from the shift in plan (lateral stability of the track), the stability of the railroad along its width, the smoothness rate for passenger cars), coefficients of vertical and horizontal dynamics. These criteria are regulated by the norms applicable in the railway transport of Ukraine. In turn, on the European railways are used: the safety index from the ascent of the wheel from the rail, the index of stability of the rail-sleeper grid from the displacement (criterion Prudoma), the indicator of the resistance of the trolley rotation relative to the body frame, the acceleration of the body in the horizontal and vertical directions, comfort indicators.

The mathematical modeling of the process of ascent of the wheel from the rail[1] allows for the use of another criterion, which is called additional. According to this criterion, the wheel's east from the rail is possible under the following condition[2]:

$$\Delta r \geq h_{\text{гр}}, \tag{6}$$

where Δr — the wheel radius increases from its mean value; — the height of the ridge (28 mm).

The increase in the radii of the wheels depends on the transverse displacement of the wheel pair $y_{\text{кп}}$, the horizontal inequality $\eta_{\text{гор}}$, the numerical value of the conical profile of the wheel at the point of contact with the rail n and the nominal clearance between the wheel comb and the inside edge of the rail head.

For wheels of the first trolley, the growth of radii is based on the formulas:

$$\Delta r_1 = n_2^{\text{I}} \cdot y_{\text{кп1}} - n_2^{\text{I}} \cdot \eta_{\text{гор1}} + \delta_{\text{1н}} \cdot \left(n_1 - n_2^{\text{I}}\right), \tag{7}$$

$$\Delta r_2 = -n_2^{\text{II}} \cdot y_{\text{кп1}} + n_2^{\text{II}} \cdot \eta_{\text{гор2}} + \delta_{\text{2н}} \cdot \left(n_1 - n_2^{\text{II}}\right), \tag{8}$$

$$\Delta r_3 = n_2^{\text{III}} \cdot y_{\text{кп2}} - n_2^{\text{III}} \cdot \eta_{\text{гор3}} + \delta_{\text{3н}} \cdot \left(n_1 - n_2^{\text{III}}\right), \tag{9}$$

$$\Delta r_4 = -n_2^{\text{IV}} \cdot y_{\text{кп2}} + n_2^{\text{IV}} \cdot \eta_{\text{гор4}} + \delta_{\text{4н}} \cdot \left(n_1 - n_2^{\text{IV}}\right). \tag{10}$$

For the wheels of the second carriage:

$$\Delta r_5 = n_2^{\text{V}} \cdot y_{\text{кп3}} - n_2^{\text{V}} \cdot \eta_{\text{гор5}} + \delta_{\text{5н}} \cdot \left(n_1 - n_2^{\text{V}}\right), \tag{11}$$

$$\Delta r_6 = -n_2^{\text{VI}} \cdot y_{\text{кп3}} + n_2^{\text{VI}} \cdot \eta_{\text{гор6}} + \delta_{\text{6н}} \cdot \left(n_1 - n_2^{\text{VI}}\right), \tag{12}$$

[1] Ibidem.

[2] *Dinamika passazhirskogo vagona i puti modernizacii telezhki KVZ-CNII* (2001) [Dynamics of the passenger car and the way of modernization of the carriage KVZ-TsNII] / V. V. Khusydov, A. A. Khokhlov, H. Y. Petrov, V. D. Khusydov. Moscow : MIIT, 160 p. [in Russian].

$$\Delta r_7 = n_2^{\text{VII}} \cdot y_{\text{кп4}} - n_2^{\text{VII}} \cdot \eta_{\text{гор7}} + \delta_{7\text{н}} \cdot \left(n_1 - n_2^{\text{VII}}\right), \quad (13)$$

$$\Delta r_8 = -n_2^{\text{VIII}} \cdot y_{\text{кп4}} + n_2^{\text{VIII}} \cdot \eta_{\text{гор8}} + \delta_{8\text{н}} \cdot \left(n_1 - n_2^{\text{VIII}}\right), \quad 14)$$

where $n_2^{\text{I–VIII}}$ — the numerical value of the taper at the points of contact of the wheel and the rail at the first — the eighth wheel of the car of the diesel train; $\delta_{\text{1–8н}}$ — Nominal values of gaps between the rims of the wheels and the internal faces of the rails; $\eta_{\text{гор1-8}}$ –the numerical value of the horizontal inequalities under the first one — the eighth wheel of the diesel train car.

In formulas (7–14) for further calculations it is necessary to determine. These parameters are the values of the taper of the wheels on the rim or on the crest, depending on the position of the wheel coupling in the rail track. The position of the wheelset during the simulation is controlled by the numerical value of the gap between the crest and the inner face of the rail head $\delta_{\text{гр}}$ (Fig. 2).

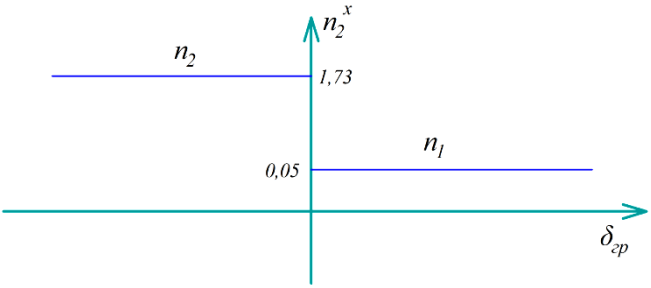


Fig. 2. Numerical value of the taper of the wheels depending on the gaps between the ridge of the wheel and the inner face of the rail head

For the wheels of the first cart:

$$\delta_{\text{гр1}} = \delta_{1\text{н}} - y_{\text{кп1}} + \eta_{\text{гор1}}, \quad (15)$$

$$\delta_{\text{гр2}} = \delta_{2\text{н}} + y_{\text{кп1}} - \eta_{\text{гор2}}, \quad (16)$$

$$\delta_{\text{гр3}} = \delta_{3\text{н}} - y_{\text{кп2}} + \eta_{\text{гор3}}, \quad (17)$$

$$\delta_{\text{гр4}} = \delta_{4\text{н}} + y_{\text{кп2}} - \eta_{\text{гор4}}. \quad (18)$$

Similarly, you can get formulas for the wheels of the second carriage.

While calculating, the following provisions are used:

– if, $\delta_{\text{гр}} \geq 0$, then the touch of the ridge with the head of the rail is not observed and $n_2^{\text{I–VIII}} = n_1$ –roller rolling occurs on the rim of the wheel;

– if $\delta_{\text{гр}} < 0$, then there comes a ridge of the wheel on the head of the rail (rolling occurs on the ridge) and $n_2^{\text{I–VIII}} = n_2$.

where n_1, n_2 — the tapered rim and rim of the wheel respectively.

Geometric equivalent inequalities of the left and right rails are taken as perturbations both in the vertical and in the horizontal plane:

$$\eta_{\text{вер}} = H_{\text{вер}} \sin \nu_1 t, \tag{19}$$

$$\eta_{\text{гор}} = H_{\text{гор}} \sin \nu_2 t, \tag{20}$$

where

$$_1 = \frac{2\pi}{L_{\text{вер}}} \upsilon, \tag{21}$$

$$_2 = \frac{2\pi}{L_{\text{гор}}} \upsilon, \tag{22}$$

where $H_{\text{вер}}, H_{\text{гор}}$ — the amplitude of the vertical and horizontal inequalities; $L_{\text{вер}}, L_{\text{гор}}$ — length of vertical and horizontal irregularities; υ — speed of movement.

So, considering the motion on the straight line of the track using computer simulation, we will analyze an additional safety criterion, which can determine the stability of the wheel from rolling on the head of the rail.

The results are presented in (Figure 3).

Similar results can be obtained when conducting calculations for any wheel trolley, while changing both the parameters of rolling stock, as well as parameters of the rail track. It should be noted that the use of an additional criterion, allows you to track the time when it is necessary to check the possibility of rolling the wheel on the head of the rail. However, getting a negative gap between the crest and the head of the rail does not yet indicate the beginning of rolling the wheel on the head of the rail.

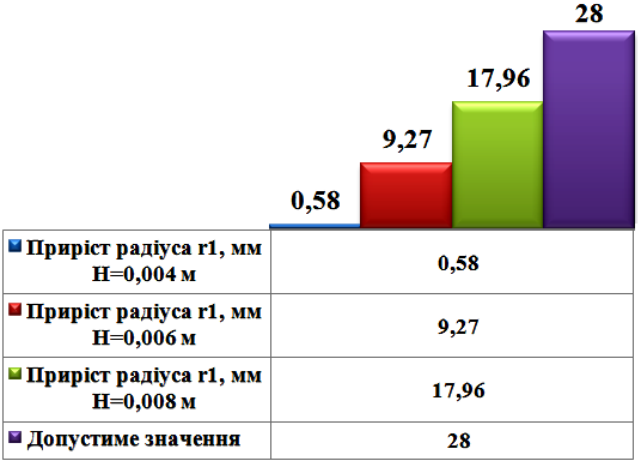


Fig. 3. Growth of the radius of the first wheel of the first wheel steam at a speed of 30 m / s

Conclusions. Conclusions Thus, in relation to the interaction of the track and rolling stock there is a significant number of works based on the methods for solving the problems of the

wheel's ascent from the rail. It should be noted that the methods that are the basis for the calculations are different.

The study of an additional criterion for assessing the safety of motion was carried out, according to which the ascent of the wheel from the rail was analyzed at the actual lifting of the comb of the wheel on the head of the rail.

Based on the research, it was noted that the use of an additional criterion, according to which the stability of the wheel from the east is analyzed by the actual rise of the ridge of the wheel on the head of the rail, allows you to track the time when it is necessary to check the possibility of rolling the wheel on the head of the rail. However, getting a negative clearance between the crest and the head of the rail does not yet indicate the beginning of rolling the wheel on the head of the rail. This feature will explore the development of the mechanism of the traffic accident, to determine more precisely its direct technical cause, the sequence of intermediate technical reasons that led to it.

ВИКОРИСТАННЯ ДОДАТКОВОГО КРИТЕРІЮ ОЦІНЮВАННЯ БЕЗПЕКИ РУХУ ВІД СХОДУ КОЛЕСА З РЕЙКИ В СУДОВІЙ ЗАЛІЗНИЧНО-ТРАНСПОРТНІЙ ЕКСПЕРТИЗІ

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Проведено дослідження додаткового критерію оцінювання безпеки руху, відповідно до якого схід колеса з рейки аналізувався за фактичним підйомом гребня колеса на головку рейки. Зазначена особливість дозволить детальніше дослідити розвиток механізму залізнично-транспортної пригоди.

Ключові слова: взаємодія колії та рухомого складу, схід колеса з рейки, безпека руху, механізм залізнично-транспортної пригоди.

ИСПОЛЬЗОВАНИЕ ДОПОЛНИТЕЛЬНОГО КРИТЕРИЯ ОЦЕНКИ БЕЗОПАСНОСТИ ДВИЖЕНИЯ ОТ СХОДА КОЛЕСА С РЕЛЬСОВ В СУДЕБНОЙ ЖЕЛЕЗНОДОРОЖНО-ТРАНСПОРТНОЙ ЭКСПЕРТИЗЕ

А. Я. Кузишин*, *А. В. Батиг

Наработано ряд методов для определения возможности схода колеса колесной пары с рельсового пути, которые в той или иной степени учитывают особенности их взаимодействия. Однако методы, положенные в основу расчетов, различаются между собой. Проблема осложняется отсутствием достаточного количества экспериментальных данных, которые бы позволили проверить адекватность моделей, положенных в расчеты. Авторами проведено исследование влияния дополнительного критерия оценки безопасности движения, согласно которому сход колеса подвижного состава с рельса анализировался по фактическому подъему гребня колеса на головку рельса. Отмечено, что прирост радиусов колес, который учитывается при вычислении указанного критерия, зависит от поперечного перемещения колесной пары, горизонтальной неровности, числового значения конусности профиля колеса в точке контакта с рельсом и номинальных зазоров между гребнем колеса и внутренней гранью головки рельса. На основе проведенных исследований сделан вывод, что использование дополнительного критерия, в соответствии с которым устойчивость колеса подвижного состава от схода анализируется по фактическому подъему гребня колеса на головку рельса, позволяет отслеживать момент времени, когда

необходимо проверять возможность вкатывания колеса на головку рельса. Однако получение отрицательного зазора между гребнем колеса и головкой рельса еще не свидетельствует о начале вкатывания колеса на головку рельса. Указанная особенность позволит исследовать развитие механизма железнодорожно-транспортного происшествия, точнее определить его непосредственную техническую причину, последовательность промежуточных технических причин, приведших к ней.

Ключевые слова: сход колеса с рельса, безопасность движения, механизм железнодорожно-транспортного происшествия.

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FORENSIC APPROACH TO DISTRIBUTION OF LAND FACILITIES UNDER THE COEFFICIENT FOODS

Determining issues of the possibility of land plot (shares) division is considered. The normative-legal acts regulating the organization and division of land plots (shares) are given. The difference of land plots (shares) from other land plots is revealed. The algorithm of conducting research on the given question is given.

Keywords: land plot (share), agro-industrial groups of soils, bonito points, boundaries of the land plot.

The scientific and methodological recommendations on the preparation and appointment of forensic examinations and expert research [1] identified the main tasks of the land technical expertise:

— definition of actual land use by land, namely physical characteristics of land plots (configuration, area, dimensions, etc.);

— determining the correspondence of the actual location of buildings, structures and other objects relative to the boundaries of land plots to their location in the relevant technical documentation;

— determination of the correspondence of actual land use with respect to violation of the boundaries and overlay of land in accordance with the legal documents and land use documentation for these plots;

[1] *Naukovo-metodychni rekomendatsii z pytan pidhotovky ta pryznachennia sudovykh ekspertyz ta ekspertnykh doslidzhen, zatv. nakazom Ministerstva yustytsii Ukrainy vid 08.10.1998 № 53/5. Ofits. visnyk Ukrainy* [Scientific and methodological recommendations on the issues of preparation and recognition of forensic examinations and researches, approved by the Order of the Ministry of Justice of Ukraine dated 08.10.1998 № 53/5 Official bulletin of Ukraine]. 1998. № 46. P. 172 (as amended). URL: http://zakon0.rada.gov.ua/laws/show/z0705–98 [in Ukrainian].

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— determination of distribution (use) of land plots, development of variants of their distribution (use of the procedure);

— definition of possible variants of approach and passage to the land, establishment of land servitude.

These tasks are assigned to experts in carrying out land-technical expertise and expert research in all types of legal proceedings of Ukraine. At the same time, issues related to the need to determine the possibility of developing options for the distribution of land (shares) are relevant. Methodologies registered in the Register of methods of conducting forensic examinations of the Ministry of Justice of Ukraine, or methodological recommendations on these issues are currently absent.

Land (units) in addition to the general physical spatial characteristics have qualitative characteristics and therefore the size of land parcels (shares) for one former farm, field, array different in physical hectares. Separation of land plots (shares) only taking into account the area does not correspond to the size of the co-owners' shares on this object of research.

In the algorithm of land-technical expertise and expert research, the initial task of an expert is to study the issue of the actual location of the turning points of the external boundaries of the land plot in accordance with these rights documents.

According to Art. 79 of the Land Code of Ukraine[1] (LCU) the land plot is a part of the earth's surface with established limits, a definite place of location, with defined rights in relation to it. Ownership of the land spreads within its boundaries to the surface (ground) layer.

Art. According to Art. 1 of the Law of Ukraine On Land Management Land Surplus is a complex of works on establishment or restoration in the nature (on the ground) of the boundaries of the land plots of owners, land users, including tenants, with the fixation of their boundary marks of the established model; plan of the land plot is a graphic representation of the location, the external boundaries of the land plot and the boundaries of land, limited use and limited (burdened) rights of other persons (land servitudes), as well as the placement of real estate, natural resources on the land; through the moon — the location between several plots of land owned by one person and located in one array of agricultural land, land plots owned by another person.

Requirements Art. 1 of the Law of Ukraine *On State Land Cadaster* states that the State Land Cadaster is the only state geoinformation system of land information located within the boundaries of the state border of Ukraine, their purpose, restrictions on their use, as well as data on the quantitative and qualitative characteristics of land, their assessment, about the distribution of

[1] *Zemelnyi kodeks Ukrainy : Zakon Ukrainy* [The Land Code of Ukraine : Law of Ukraine] dated on: 25.10.2001 № 2768–III. Bulletin of Verkhovna Rada of Ukraine. 2002. № 3–4. Art. 27 (as amended). URL: http://zakon5.rada.gov.ua/laws/show/2768–14 [in Ukrainian].

land between owners and users; state registration of a land plot is the submission to the State Land Cadaster of information provided by this Law on the formation of land and the assignment of a cadastral number to it.

On January 1, 2013, the automated system *National cadastral system* (NSC) was put into operation. In pursuance of Art. 36 of the Law of Ukraine On State Land Cadaster, the State Land Agency of Ukraine has open access to the public cadastral map, which contains information on the cadastral number of the land plot, its boundaries, area, form of ownership, intended use according to the classifier.

Consequently, in accordance with the normative legal acts of Ukraine in the field of land relations, the boundaries between land plots are the corners of the turning points of the boundaries of adjacent invented land plots registered in the State Land Cadaster. Graphically, data on the registered limits of land plots is reflected in the Public Cadastral Map of Ukraine[1].

The next task of the expert is to study the qualitative characteristics of the land plot (share), which data can be obtained from such documents in accordance with Art. 25 of the Law of Ukraine "On Land Management", : d) land management projects concerning the privatization of lands of state and communal agricultural enterprises, institutions of organizations; g) land management projects regarding the organization of land parcels (shares).

According to the requirements of Art. 49 of the Law of Ukraine: *On Land Management*, land management projects concerning the privatization of lands of state and communal agricultural enterprises, institutions and organizations include: a) the task of drafting a land management plan; b) an explanatory note; c) the decision of the relevant executive body or local self-government body on the privatization of land; d) a list of persons entitled to receive a land parcel (share); e) materials of normative monetary valuation of agricultural lands of the enterprise; e) the scheme of land distribution of enterprises, institutions, organizations on the ground, transferred to private property and remain in state or communal ownership (forestry, water fund, reserve fund); e) materials for calculating the value and size of the land parcel (share) in the conventional cadastral hectares; e) a scheme for the division of agricultural land subject to privatization into land; g) materials for the approval of the land management project, established by Art. 186 of LCU; c) information on the calculation of the area of the land; i) cadastral plan of the land plot; i) a list of restrictions on the use of land plots; i) materials transferring the boundaries of land plots in kind (to the locality).

After approval of the land management project concerning the privatization of land of state and communal agricultural enterprises,

[1] *Publichna kadastrova karta Ukrainy* [Public Cadastral Map of Ukraine]: URL: http:// map.land.gov.ua/kadastrova-karta [in Ukrainian].

institutions and organizations when transferring the boundaries of land plots in kind (to the locality), it is joined to it:

— act of acceptance-transfer of boundary marks for storage;

— an act of transferring in kind (on a locality) between the guarded zones, zones of sanitary protection, sanitary protection zones and areas of special regime of use of land, in their presence.

According to the requirements of Art. 1 of the Law of Ukraine: *On Land Management*, land management projects concerning o*rganization of the territory of land shares (shares)* are developed with the purpose of forming land plots of agricultural lands, which are subject to distribution among owners of land shares (shares). In case of necessity, in land management projects concerning the organization of the territory of land shares (shares), the conversion of the size into the conditional cadastral hectares and the value of the land parcel (share) is carried out. From the area of land plots subject to distribution, it excludes: a) degraded, unproductive, as well as technogenically contaminated agricultural land subject to conservation; b) wetlands; c) the land on which explored mineral deposits of national significance are located, the stocks of which are approved in accordance with the procedure established by the legislation; d) other land that is inappropriately used for agricultural purposes.

Land management projects concerning the organization of land parcels (shares) are developed on the basis of the decision of the respective village, settlement, city council or district state administration on the allocation of land plots in kind (on the ground) to the owners of land shares (shares).

Land management projects concerning the organization of the territory of land shares (units) include: a) the task of drafting a land management plan; b) an explanatory note; c) the decision of the respective village, town, city council or district state administration on the allocation of land plots in kind (on the ground) to owners of land shares (shares); d) a list of persons entitled to receive a land parcel (share); e) Materials of calculation (if necessary — recalculation) of the cost and size of the land parcel (share) in the conditional cadastral hectares; e) scheme of distribution of land plots to owners of land shares (shares); e) information on the area of land, cadastral numbers of land plots and a list of restrictions on their use; e) materials for approval and approval of the land management project, established by Art. 186 LCU; g) materials transferring the boundaries of land plots in kind (on the terrain), formed by the project.

After the allocation of the land parcels (units) to the owners of the land in kind (on the ground) to the land management project concerning the organization of the territory of the land shares (units), the following are added:

— an act of transferring in kind (on a locality) between the guarded zones, zones of sanitary protection, sanitary protection zones and areas of special regime of use of lands in their presence;

— act of acceptance-transfer of boundary marks for storage.

Analysis of the mentioned legislation testifies that the objects of research in the distribution of land plots (shares) are formed land plots with the rights determined in relation to them, which are reflected in the data of the State register of real rights to real estate and their encumbrances, the State Land Cadaster, in Projects land management in relation to privatization of lands of state and communal agricultural enterprises, institutions and organizations; Land management projects for the organization of land parcels (shares). Also, it should be noted that the expert must provide originals or certified qualitative copies of the relevant legal and technical documentation on land management land; provide data on the use of co-owners of this object or their parts and data on the shares of co-owners.

The difference in land plots (shares) from other land parcels subject to distribution (land plots of private peasant farms, land plots of horticultural cooperatives, etc.) is that in addition to spatial characteristics: location, area, configuration, linear dimensions of the boundary, land plots (units) have data on the qualitative characteristics of the soil: Bonity points (bonitas — high quality), which are calculated when soil softening. Also, plots (units) have different sizes in physical hectares and the same size in the value of the land parcel and its size in the conventional cadastral hectares.

Requirements of paragraph 3 of the Decree of the President of Ukraine *On the procedure for land allotment transferred to the collective ownership of agricultural enterprises and organizations*[1] stipulated that the value of the land parcel (share) for each enterprise, cooperative, partnership is determined on the basis of the monetary valuation of agricultural lands transferred to the collective property, which is calculated according to the method of land valuation, approved by the Cabinet of Ministers of Ukraine, and the number of persons entitled to a land parcel (share). The size of the land parcel (share) in the conditional cadastral hectares is determined on the basis of the value of the land parcel (share) and the average monetary value of one hectare of agricultural land for a particular enterprise, cooperative, partnership. That is, in all circumstances, the total value of the formed land plot (share), regardless of which quality of the array of fields it is allocated, remains the same and is equal to the value of land shares in the former enterprise (farm).

According to Art. 199 of LCU determined that soil conditioning is a comparative assessment of the quality of soils based on their main natural properties, which are of a permanent nature and have a significant effect on the yield of agricultural crops grown in specific climatic conditions; Soil

[1] *Pro poriadok paiuvannia zemel, peredanykh u kolektyvnu vlasnist silskohospodarskym pidpryiemstvam i orhanizatsiiam: Ukaz Prezydenta Ukrainy* [On the procedure for land allotment transferred to the collective ownership of agricultural enterprises and organizations: Decree of the President of Ukraine] dated on: 08.08.1995 № 720/95. URL: http:// http://zakon1.rada.gov.ua/laws/show/720/95 [in Ukrainian].

cultivation is carried out on a 100-point scale. The highest score is estimated soils with the best properties, which have the greatest natural productivity. In this case, the objects of bonite are agro-industrial groups of soils within the boundaries of natural and agricultural areas. In accordance with Annex 5 of the Procedure for the introduction of the State Land Cadaster[1], a list of agro-industrial groups of soils, their codes and names are specified. That is, the source data for the distribution of land plots (shares) are, in addition to spatial data: the names of agro-industrial groups of the land, their code and quality of soil. It should be borne in mind that the bonus score of each agricultural group of soils for each natural and agricultural area is different and is calculated by the formula:

$$Б = \frac{П}{П_е} \times 100^2$$

where Б is a bonite point; П — index of soil properties for which the balloon is determined (for example, the content of humus); $П_е$ — index of soil properties adopted for the standard.

It should be noted that within a single land parcel (share) there may be several agro-industrial groups of soils. In this case, it is necessary to determine the area of each agro-industrial group of soils within the investigated land plot is a share (share). Consequently, taking into account qualitative indicators, the cost of the investigated land parcel (share) will be the sum of the value of individual areas of agro-industrial groups of soils:

$$Г_{зд} = \sum (П^i_{агр} \times Б^i_{агр}) \text{ (бал га)}$$

where $П^i_{агр}$ — is the area of the agricultural production group of soils within the boundaries of the land, ha; $Б^i_{агр}$ — the point of the bonite and the first agro-industrial group of soils within the boundaries of the land, a ball.

At the same time, taking into account qualitative indicators, the value of the investigated land plot is the share (share) corresponds to the size of the average share (share) per given holding or in a separate field.

It should be noted that in some regions of Ukraine, when calculating the average share of the unit, in cash, in the course of carrying out the works on drawing up Land Management Projects on the privatization of land of state and communal agricultural enterprises, institutions and organizations and Land Management Projects regarding the organization of land parcels (shares). Therefore, in calculations, instead of qualitative estimation of agro-

[1] *Dodatky 2–53 do Poriadku vedennia Derzhavnoho zemelnoho kadastru (zi zminamy ta dopovn.). Uriadovyi kur'ier* [Annexes 2–53 to the Procedure for keeping the State Land Cadaster (as amended and supplemented). Government Courier] dated on: 27.11.2012 № 218. URL: http://zakon2.rada.gov.ua/laws/show/10516–2012–п [in Ukrainian].

[2] *Metodychni osnovy hroshovoi otsinky zemel v Ukraini* (2007) [Methodological basis of monetary valuation of land in Ukraine]: tutorial Yu. F. Dekhtiarenko, M. H. Lykhohrud, Yu. M. Mantsevych, Yu. M. Palekha. Kyiv: Profi, p. 192 [in Ukrainian].

industrial groups of soils in bonite points, the cost of 1 hectare of agro-industrial groups of soils in hryvnias was used.

Consequently, the size of a part of a land plot (share) of co-owners in accordance with their shares in the right of ownership is:

$$\Gamma_{\text{зд}}^{N} = \Gamma_{\text{зд}} \times Д^{N} \text{ (бал га)}$$

where $\Gamma_{\text{зд}}^{N}$ — the cost of a part of a land plot (share) of the co-owner, a ball; $\Gamma_{\text{зд}}$ — the cost of the land (share) — the size of the average share (share) for the given holding or in a separate field, ball; $Д^{N}$ — is the ideal share of the co-owner.

In this case, the size of the land plot (share) of co-owners in accordance with their shares in the right of ownership is:

$$\Gamma_{\text{зд}}^{N} = \sum (\Pi_{\text{агр}}^{Ni} \times Б_{\text{агр}}^{Ni}) \text{ (бал га)}$$

where $\Gamma_{\text{зд}}^{N}$ — the cost of a part of a land plot (share) of the co-owner, a ball; $\Pi_{\text{агр}}^{Ni}$ — area of the agricultural production group of soils within the part of the land plot (share) allocated to the N-th co-owner, ha; $Б_{\text{агр}}^{Ni}$ — is the ball of the bonus of the first agricultural group of soils within the part of the land plot (share) allocated to the N-th co-owner, a ball.

As can be seen from the preliminary calculations, the area of the land plot (share) of each co-owner, in accordance with its share in the right of ownership, is calculated by the method of approaching its share in the "average share" (share) of the given holding or in a separate field. This distribution method can be implemented using specialized software, such as a computer program for creating digital maps and plans, processing geodetic measurements, and preparing Delta/Digitals land-use documentation [1].

A separate section for the allocation of land (units) is the fact that each of its parts should have an entrance. It should be taken into account that, in the contour-reclamation arrangement of a unit, the distribution must be carried out along the long side of the land plot. Therefore, if necessary, it is necessary to propose the establishment of an easement (Article 99 of the LCU) for the passage to a part of the land without an entrance.

Summing up the mentioned in the decision of the questions related to the study of the distribution of land plots (shares), in order to ensure the completeness of the study, it is proposed to take into account all the factors and characteristics of land plots (shares) that affect the correctness of the distribution, including qualitative indicators land plots. In connection with the lack of methodology or methodological recommendations for the distribution

[1] *Delta/Digitals — prohramne zabezpechennia dlia tsyfrovoi kartohrafii ta zemleustroiu* [Delta/Digitals — software for digital cartography and land management]: URL: http://www.vinmap.net/?act=index [in Ukrainian].

of land plots (units), there is a need for the development of an appropriate methodology, its approbation and implementation in expert practice.

ЕКСПЕРТНИЙ ПІДХІД ДО РОЗПОДІЛУ ЗЕМЕЛЬНИХ ДІЛЯНОК ВІДПОВІДНО ДО ПАЇВ СПІВВЛАСНИКІВ

Т. А. Таранець

Розглянуто питання визначення можливості поділу земельних ділянок (паїв). Наведено нормативно-правові акти, які регулюють питання організації та поділу земельних ділянок (паїв). Розкрито відмінність земельних ділянок — паїв від інших земельних ділянок. Наведено алгоритм проведення дослідження із зазначеного питання.

Ключові слова: земельна ділянка (пай), агровиробничі групи ґрунтів, бали бонітету, межі земельної ділянки.

ЭКСПЕРТНЫЙ ПОДХОД К РАЗДЕЛУ ЗЕМЕЛЬНЫХ УЧАСТКОВ В СООТВЕТСТВИИ С ПАЯМИ СОВЛАДЕЛЬЦЕВ

Т. А. Таранец

Рассмотрен вопрос определения возможности и порядок раздела земельных участков (паев) разных форм собственности и пользования ими физическими и юридическими лицами при проведении экспертиз и экспертных исследований. Приведены нормативно-правовые акты, которые регулируют вопросы установления межи и эксплуатации земельных участков (паев). Дан анализ вопросов земельно-технических экспертиз и экспертных исследований, которые касаются возможности проведения разделов земельных участков (паев). При этом указывается, что при проведении исследований по вопросам разделов земельных участков (паев) судебному эксперту необходимо учитывать, что физический размер участка (пая) не совпадает с его размером в условных кадастровых гектарах, все земельные участки (паи) хозяйства (предприятия) имеют одинаковую стоимость и размер в условных кадастровых гектарах; физический размер участков (паев) зависит от качества почвы (грунта). Качество почвы (грунта) определяется баллом бонитета, одноименные почвы угодий имеют одинаковый бал бонитета по всему природно-сельскохозяйственному району. При этом размер долей земельных участков (паев) совладельцев вычисляется пропорционально их долям в праве собственности на земельный участок (пай). Условный размер доли земельного участка (пая) совладельца определяется как сумма площадей агропроизводственных групп грунтов, расположенных на этой части пая, в качественном выражении, который рассчитывается методом приближения к его части в «средней доле» пая по хозяйству (предприятию). Такой метод расчета можно выполнить, используя специализированное программное обеспечение, например, компьютерную программу для создания цифровых карт и планов, обработки геодезический измерений и подготовки землеустроительной документации Delta/Digitals.

Ключевые слова: земельный участок, агропроизводственные группы грунтов, баллы бонитета, межи земельного участка.

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METHODOLOGICAL APPROACHES TO EXPERIMENTAL RESEARCH ON THE CALCULATION OF A DAMAGE CAUSED BY LAND RESOURCES

Methodological approaches to forensic research of damage calculation, caused by littering of the land resources, are considered.

Keywords: forensic engineering-ecological examination, littering of lands, nature protection legislation, waste.

Determination of the damage caused by littering of land resources constitutes a significant share in the overall volume of environmental offenses that are being investigated and investigated by the courts in Ukraine, and their investigations are the most complex in this category.

Cases of littering of lands belong to some of the most widespread ecological offenses. Most of the damages for littering land resources are determined by large sums, which according to the Criminal Code of Ukraine are considered as grave or especially grave consequences of violations of environmental legislation. For such crimes criminal liability is foreseen. For the most part, compensation is due to court decisions.

According to the calendar plan of the Ministry of Justice of Ukraine for 2017, the *Integrated method for expert determination of damage caused by littering of land resources*[1] (hereinafter referred to as the Integrated Methodology) was developed at the KhRIFE, which defines the main provisions of the procedure for carrying out complex engineering-ecological and economic research on the determination of damage, caused by littering of land resources. Research topicality is connected with the growing needs in solving the issues put forward by the experts by the bodies of pre-trial investigation, judicial investigation, organizations and citizens regarding the determination of damage caused by the contamination of land resources.

From the point of view of the legal mechanism for determining the damage caused by the contamination of land resources, it is based on the sectoral Methodology for determining the extent of damage caused by

[1] *Kompleksna metodyka ekspertnoho vyznachennia shkody, zumovlenoi zasmichenniam zemelnykh resursiv: zvit pro NDR/KhNDISE; I. P. Krainov ta in.* (2017) [Integrated method of expert determination of damage caused by littering of land resources: report on R&D/KhRIFE I. P. Krainov and others] № ДР 0116U0038752017. Kharkiv, 20 p.

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contamination and contamination of land resources due to violations of environmental legislation[1] (hereinafter: Methodology). Failure to comply with the legislation on the protection and rational use of land resources that contaminated lands is determined in accordance with the document. The sectoral methodology also defines the amounts of compensation for losses incurred by the state as a result of such clogging. The Branch Methodology is used in case of non-compliance with the requirements of the legislation revealed in the state supervision (control) of economic activity in respect of compliance with environmental protection legislation by economic entities (in accordance with the Law of Ukraine On the Basic Principles of State Supervision (Control) in the Field of Economic Activity[2]). Employees of the State Ecological Inspection of Ukraine (DEI) use the sectoral Methodology for calculating the amount of damage caused by contamination and clogging of land resources of various categories.

The most well-known and widespread cases of non-compliance with the requirements of the law are those stated in the documents of inspections of state control bodies (State Ecological Inspection of Ukraine, Ministry of Health of Ukraine), which became the subject of pre-trial investigation of law enforcement agencies, consideration in the courts of all instances in cases all forms of legal proceedings (administrative, economic, criminal, civil, administrative offenses).

In the Comprehensive technique it is suggested to take into account, when expert analysis of the calculation of damage from land clogging, the following stages:

— verification of the terms of application of the calculation;

— verification of the correctness of the initial data taken for calculation;

— verification of the formal and arithmetic correctness of the calculation;

— general conclusion on the correctness of the calculation performed by the DEI.

Regarding the verification of the terms of application of the calculation. Terms for calculating the amount of damage caused as a result of littering the land are based on the following provisions:

— the technique is used in determining the extent of damage from

[1] *Metodyka vyznachennia rozmiriv shkody, zumovlenoi zabrudnenniam i zasmichenniam zemelnykh resursiv cherez poru-shennia pryrodookhoronnoho zakonodavstva, zatv. nakazom Ministerstva okhorony navkolyshnoho pryrodnoho seredovyshcha* [Methodology for determining the extent of damage caused by pollution and contamination of land resources due to violations of environmental legislation], approved by the of the Ministry of Environmental Protection dated October 27, 1997, № 171, as amended (in the wording of the Order of the Ministry of Environmental Protection of 04.04.2007 № 149). URL: http://zakon3.rada.gov.ua/laws/show/z0285–98 [in Ukrainian].

[2] *Pro osnovni zasady derzhavnoho nahliadu (kontroliu) u sferi hospodarskoi diialnosti: Zakon Ukrainy* [On the Basic Principles of State Supervision (Control) in the Field of Economic Activity : Law of Ukraine] dated on: 05.04.2007 № 877–V. URL: http://zakon3.rada.gov.ua/laws/show/877–16.

contamination (clogging) of lands of any intended purpose, which occurred as a result of unauthorized (unforeseen projects, permissions) of discharges (emissions) of substances, compounds and materials due to violation of the rules of environmental safety in case of storage, transportation and carrying out loading and unloading works, use of pesticides and agrochemicals, toxic substances, industrial and household wastes; unauthorized placement of industrial, household and other wastes;

— the method does not apply to the determination of the amount of damage caused to land resources due to their radioactive or bacterial contamination;

— if litter is detected, the amount of litter and other indicators that are necessary to determine the extent of damage are determined on the spot;

— the amount of damage is calculated by authorized persons exercising state control over compliance with the requirements of environmental legislation, on the basis of inspection acts, protocols on administrative violations and other materials confirming the fact of earth logging, within six months from the date of detection of the violation;

— the basis of calculations of the amount of damage from littered land is the normative monetary valuation of the depleted plot of land;

— the wastes that contaminated the land plot are classified in 4 classes of hazard in accordance with the current regulations in the field of waste management (Annex 5 of the Methodology);

— the classification of the waste that caused the contamination of the land plot to the category of hazardous (toxic) waste is carried out in accordance with the current normative documents in the field of waste management, approved in accordance with the established procedure, lists of hazardous (toxic) wastes, etc.

Regarding the correctness verification of original data taken for calculation. The damage caused by the clogging of lands is determined by the formula 6 of the Methodology.

$$Р_{шз} = А \times Б \times Г_{оз} \times П_{дз} \times К_{зз} \times К_{нв} \times К_{ег}\ , \qquad (1)$$

where $Р_{шз}$ — size of damage from littering of lands, UAH; А — specific costs for the elimination of the consequences of littering the land; Б — conversion factor; $Г_{оз}$ — normative monetary value of the land plot that was littered, UAH / $м^2$; $П_{дз}$ — the area of the littered land, $м^2$; $м^2$; $К_{зз}$ — coefficient of clogging of the land plot, which characterizes the degree of littered by its waste; $К_{нв}$ — coefficient of hazard of waste; $К_{ег}$ — coefficient of ecological and economic value of lands.

The calculation form is given in appendix 8, an example of calculation — in Annex 11 of the Methodology.

Verification is carried out according to the following nomenclature and indicators:

— area of the clogged area, m^2 ($П_{дз}$) is determined by the act of clogging of lands and materials of special investigations;

— the volume of waste (m^3) that caused the clogging, is determined by the volumetric characteristics of this clogging as a product of the area of clogging of the land plot on the thickness of the layer of these wastes. The thickness of the layer of waste of the site is determined by measurement;

— specific expenses for the elimination of the consequences of clogging (A), the value of which is 0.5;

— coefficient of recalculation (B) that when littered land by household, industrial and other wastes is equal to 10, and hazardous (toxic) waste — 100;

— normative monetary value of the land plot (indexed), UAH / m*2* ($Г_{оз}$) is determined by the certificate of the territorial body of the State Committee for Land Resources;

— coefficient of contamination of the land ($К_{зз}$) is determined in accordance with Appendix 6 of the Methodology;

— the hazard ratio of waste ($К_{нв}$) is determined in accordance with Annex 5 of the Methodology;

— coefficient of ecological and economic value of lands ($К_{ег}$) is determined according to the appendix 2 of the Methodology;

— amount of damage, UAH ($Р_{шз}$), is carried out according to the corresponding formula 6 of the Methodology.

According to the pp. 5.6.1 Methods of monetary valuation of land for which it has not been determined, is carried out for the subs. 4.7.1 of this Methodology. According to the pp. 5.6.2 The methods are designed for the subscriber. 4.7.1 of this Methodology, the monetary valuation is used in formula (1) instead of the normative monetary valuation of land ($Г_{оз}$).

The value of the landfill contamination factor ($К_{зз}$) is taken according to the degree of its clogging, determined depending on the volume of waste in accordance with Annex 6 of the Methodology.

For land littered with multi-tributary (> 10 thousand tons) waste from the mining industry, the coefficient of littering of the land ($К_{зз}$) is assumed to be 1.0.

The value of the ecological and economic value of land ($К_{ег}$) is taken according to the category of contaminated lands or their status as being subject to special protection in accordance with Annex 2 of the Methodology. If, on the scale of the ecological and economic value of the land (Annex 2 Methodology), the land affected by litter, can be classified in several categories of land or security features, the calculation of the ecological and economic value of land ($К_{ег}$) with the maximum value among the corresponding coefficients is selected.

As for checking the formal and arithmetic correctness of the calculation.

The said verification relates to the compliance of the form of execution of the calculation established in the Methodology, as well as to the correctness (correctness) of the execution of arithmetical actions according to the corresponding formula 6 (the amount of damage caused by the contamination of the land), paragraph 5 of the Methodology.

The following is a general conclusion about the correctness of the calculation performed by the DEI.

The general calculation includes (combines) the results of separate calculations for each littered land, on the basis of which a general conclusion is made on the confirmation of the results of the calculation performed by the DEI. The general conclusion relates to the calculation of the total damage caused by land degradation by the WEI in the framework of planned / unscheduled verification of the subject of economic activity.

The analysis of the expert practice of using the Methodology indicates its low arbitration effect, since a significant part of the claims made by the perpetrators of damages or charges is not satisfactory in the judiciary. Under the arbitration effect understood as confirmed by the arbitration body violation of the requirements of environmental legislation, established by state environmental control. This applies most of all to large enterprises with their own legal entities. Due to the lack of objective expert opinions or the state loses significant amounts of damages (a mistake of the first kind — the offense actually took place, but not proved in court). On the other hand, when false claims, land users are unjustifiably losing (a mistake of the second kind — the offense did not actually exist, but the court's suit is satisfied).

Taking into account the above-stated, developed in Kharkiv RIFE, the Comprehensive Methodology provides an opportunity to obtain legal, logical, complete, objective, scientific, technically and economically justified answers to questions concerning the calculation of the amount of damage caused by the contamination of land resources.

МЕТОДОЛОГІЧНІ ПІДХОДИ ДО ЕКСПЕРТНОГО ДОСЛІДЖЕННЯ З РОЗРАХУНКУ ШКОДИ, ЗУМОВЛЕНОЇ ЗАСМІЧЕННЯМ ЗЕМЕЛЬНИХ РЕСУРСІВ

Р. Е. Мирошниченко, О. О. Мєшков

Розглянуто методологічні підходи до експертного дослідження розрахунку шкоди, зумовленої засміченням земельних ресурсів.

Ключові слова: судова інженерно-екологічна експертиза, засмічення земель, природоохоронне законодавство, відходи.

МЕТОДОЛОГИЧЕСКИЕ ПОДХОДЫ К ЭКСПЕРТНОМУ ИССЛЕДОВАНИЮ РАСЧЕТА УЩЕРБА, ОБУСЛОВЛЕННОГО ЗАСОРЕНИЕМ ЗЕМЕЛЬНЫХ РЕСУРСОВ

Р. Э. Мирошниченко, О. О. Мешков

Определение ущерба, обусловленного засорением земельных ресурсов, составляет значительную долю в общем объеме экологических правонарушений,

которые рассматриваются судами в Украине, а их расследования являются наиболее сложными в этой категории. Большинство убытков от засорения земельных ресурсов определяются значительными суммами, которые по Уголовному кодексу Украины рассматриваются как тяжкие или особо тяжкие последствия нарушений природоохранного законодательства. С точки зрения правового механизма определения ущерба, обусловленного засорением земельных ресурсов, базируется на отраслевой Методике определения размеров ущерба, обусловленного загрязнением и засорением земельных ресурсов через нарушение природоохранного законодательства, утвержденная приказом Министерства охраны окружающей природной среды № 171 от 27.10.1997 (с изменениями). Невыполнение законодательства об охране и рациональном использовании земельных ресурсов, повлекшие засорения земель, определяется в соответствии с этой Методикой. Методика применяется в случае нарушений, выявленных при государственном надзоре (контроле) хозяйственной деятельности по соблюдению субъектами хозяйствования природоохранного (земельного) законодательства (по закону Украины «Об основных принципах государственного надзора (контроля) в сфере хозяйственной деятельности»). Работники Государственной экологической инспекции Украины используют Методику, в частности, для расчетов размеров возмещения вреда, причиненного государству в результате засорения земель. Анализ экспертной практики использования Методики свидетельствует о ее низком арбитражном эффекте, поскольку значительная часть выдвинутых должникам исков о возмещении убытков или обвинений не удовлетворяются судебными органами. Разработанная в Харьковском НИИСЭ Комплексная методика дает возможность получить корректные с правовой точки зрения, полные, объективные, научно, технически и экономически обоснованные ответы на вопросы, касающиеся расчетов ущерба, обусловленного засорением земельных ресурсов.

Ключевые слова: судебная инженерно-экологическая экспертиза, засорение земель, природоохранное законодательство, отходы.

FORENSIC ECONOMIC AND MERCHANDIZING EXAMINATION: METHODICAL APPROACHES TO SOLVING PROBLEMS

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CLASSIFICATION OF FORENSIC ECONOMIC EXAMINATION AT THE MODERN STAGE OF DEVELOPMENT OF FORENSIC SCIENCE

Issues of classification of judicial economic examinations at the present stage of development of forensic examination are considered. Approaches to improving the classification of forensic economic examinations by introducing into the composition of the classification units of the lower level of certified expert methods, which will ensure the self-development of such a classification model, are proposed.

Keywords: classification, type of forensic examination, judicial economic expertise, classification features of judicial economic expertise, expert task, subject of forensic economic expertise.

Classification plays an important role in scientific knowledge. It is implemented both in the form of conducted research, and in the direction of scientific research. This determines the special role of those sections of science that specialize in the classification and systematization of objects of expert research, which is reflected in the object approach to classification. In addition, in judicial expert studies, other approaches to classification are widely used: for methods used in forensic examination, by subject of expert research and their subject, etc. In this connection, in the theory of forensic examination considerable attention is paid to the problem of systematization and classification of knowledge.

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The unclear and incomplete classification of forensic expertise sometimes leads to the practice of limiting the range of issues solved by experts or their misinterpretation.

Formation of new classes, genera, types of forensic examinations takes place in different ways: a new species or genus can occur inside an already existing one; at the appearance of new research objects and new tasks; the development of the kind of examination can lead to the formation of a new class. The emergence of new types and genera of expertise is also associated with the emergence of new manifestations and forms of crime. In these cases, the need for effective and rapid adaptation of forensic practice to the new criminal-law realities leads to the emergence of new ways and means of using special knowledge in the process of proof.

All this leads to a change and transformation of the developed classifications of forensic examinations, which, in turn, determines the relevance of theoretical rethinking of the grounds and principles of their construction.

The scientific classification of forensic examinations has a theoretical, applied, as well as procedural significance for the theory and practice of forensic examinations. In many scientific papers devoted to forensic expert-examination in general and the direct classification of forensic examinations, much attention was paid to forensic types of research, and other types of expertise, in particular, economic, were given insufficient attention.

In our opinion, the first attempt to develop a truly fundamental classification of economic examinations was carried out by H. A Matusovskyi in 1999.[1]

The forerunner of the forensic economic expertise was the forensic accounting examination, which dates back to 20–30 years of the last century. With the growth of the state sector of the economy and the practical disappearance of enterprises of other forms of ownership, the range of issues that was solved by forensic accounting expertise was limited to studying the way of accounting and preservation of "socialist property", and for almost a long time did not change.

But as the main criteria for evaluating the activities of state-owned enterprises was the implementation of various types of planned indicators (from technical-industrial plans to plans for improving product quality) and the introduction of new forms of remuneration, in the process of expert research, there was a need for solving problems for the establishment of qualitative and quantitative characteristics processes and phenomena associated with non-compliance with planned economic discipline. To solve these problems there were not enough traditional control methods and techniques: it was envisaged the use of mathematical and logical methods for

[1] Matusovskyi H. A. (1999) *Ekonomycheskye prestuplenyia: krymynalystycheskyi analyz* [Economic crimes: forensic analysis]. Kharkov : Consum, 480 p. [in Russian].

analyzing documentary data. A number of these techniques are developed in various sciences, in particular, in economic statistics, mathematics, planning, but most fully they are presented in the economic analysis.

This was the beginning of the structuring of traditional forensic accounting expertise.

Radical changes began after the collapse of the command-and-control system of economic management and the transition to market relations. With the transition of the planned economy to the market plan-economic expertise does not disappear as an independent type of research, since it is necessary to study the issues related to planning at the level of specific enterprises (the formation and implementation of strategic business plans), the formation of financial resources, their use, reception profit, etc.

The formation and development of the tax system of the countries of the post-Soviet area led to the fact that the main obligation of the subjects of the economy to the state was the payment of taxes.

At the same time, the state controls the targeted use of budget funds, some issues of pricing, financial and credit operations, and the financial condition of enterprises, especially in relation to bringing them to bankruptcy or fictitious bankruptcy at a new level. These processes have led to a change in the differentiation of forensic examinations. Today, according to the current normative acts regulating the conduct of forensic examinations, there is the concept of economic expertise as an independent class of expert research, that is, a broader concept of expert tasks involving the use of specialist knowledge in the field of economic sciences. In connection with this, the classification status of traditional forensic accounting expertise has declined: it has become one of the types of class of economic expertise.

Existing names of the expert specialties of forensic economic expertise in Ukraine, which may be elements of classification, are as follows[1]:

— 1.1 «Investigation of documents of accounting, tax accounting and reporting»;

— 11.2 “Investigation of documents on economic activity of enterprises and organizations”;

— 11.3 “Investigation of documents of financial and credit operations”.

It should be noted that in the title of expert specialty 11.1 the words “tax accounting”, appeared at the end of 2001 in accordance with the decision of

[1] *Pro zatverdzhennia Instruktsii pro pryznachennia ta provedennia sudovykh ekspertyz ta ekspertnykh doslidzhen ta Naukovo-metodychnykh rekomendatsii z pytan pidhotovky ta pryznachennia sudovykh ekspertyz ta ekspertnykh dos-lidzhen: nakaz Ministerstva yustytsii Ukrainy* [On approval of the Instruction on the appointment and conducting of forensic examinations and expert studies and scientific and methodological recommendations on the preparation and appointment of forensic examinations and expert studies: the order of the Ministry of Justice of Ukraine] dated on: 08.10.1998 № 53/5. Official Bulletin of Ukraine. 1998. № 46. Art: 1715 [in Ukrainian].

the Presidium of the scientific-advisory and methodical council on issues of forensic examination under the Ministry of Justice of Ukraine from 30.01.2001. It was this decision forensic accounting expertise was renamed into judicial and economic.

As is known, the classification is a system for the distribution of any homogeneous objects or concepts by classes, departments based on certain general features (criteria). In our case, such a homogeneous subject is judicial economic expertise. The result of the classification of economic examinations is a systematic unit of class, race, species, subspecies. Science is impossible without the classification and typing of studied objects. Moreover, the classification in a certain way provides the economy of thinking. It also has an important practical value, as it provides a deep study and comprehension of the object of classification.

It is traditionally difficult to select criteria for classification, including criteria for classifying court economic expertise. In search of these criteria, at the current stage of development of forensic examination, various factors can be taken as the basis. Thus, it is possible to combine forensic examinations by complexity, by volume of the source document, by the term of execution, by the subject of the study and by other general external and internal features.

The content of the classification depends on its basis, classification mark (criterion). **The concept of classification is associated with the discovery of the most significant**, **the main features of the classified objects.** In turn, the criteria are determined by the grouping tasks (goals). Hence the fundamental possibility of a plurality of classifications built on different criteria and carried out for different purposes.

Classification can be used:

— to determine further ways and possibilities of scientific research within the framework of general and separate theories of forensic examination;

— when appointing forensic examinations for the purpose of selecting the required kind (type) of forensic expert examination and forensic expert institution;

— when evaluating expert opinions, as well as carrying out statistical and other analytical measures related to it;

— in the organization of forensic expert institutions (units);

— in the preparation of expert staff and the development of appropriate training programs for experts, etc.

The need for a classification of forensic economic expertise is conditioned by the fact that the classification helps to establish the most important, common quality examinations for all, and promotes their deeper knowledge. The task of this work is to develop the theory and methodology

of forensic examination; therefore, it is necessary to allocate as much of the basic features of judicial economic expertise as possible.

The criteria for classification of forensic examinations must comply, in particular, with the following requirements:

— the mother has on its basis permanent, fundamental, and not temporary and random factors;

— to be more or less defined criteria-criteria;

— have a consistent objective character;

— distinguish the main, dominant criterion in the case where the basis of classification is laid not one, but several criteria.

The list of the main features of the object of the classification of judicial economic expertise depends on the definition of its essence. Nowadays there are different approaches to this issue. By some experts, it is considered as an independent procedural form of obtaining new ones and checking existing evidence. In the legislation of Ukraine, forensic expertise is defined as an expert study, on the basis of special knowledge of material objects, phenomena and processes containing information about the circumstances of the case, which is executed by the bodies of inquiry, pre-trial and judicial investigation[1]. Forensic economic examination is issued in the form of a text document, which also has certain features. In the procedural codes, judicial economic expertise serves as a source of evidence, which can also be distinguished by a number of specific legal features.

In order to identify the main features that may be the basis for future classification, it is proposed to understand the judicial economic expertise by substance as: research; procedural document; information.

Classifications of judicial economic expertise as a research can be:

— objects of research;

— research methods;

— the subject of the research and the task assigned to it.

Classification of judicial economic expertise as a procedural document may be:

— court proceedings in which the examination is appointed (criminal, administrative, civil, etc.);

— presence or absence of completed examinations on the relevant issues (primary, repeated, additional).

Classification features of judicial economic expertise as information can be:

— completeness;

— authenticity;

— clarity, etc.

[1] *Pro sudovu ekspertyzu: Zakon Ukrainy* [On Judicial Examination Law of Ukraine] dated on: 25 Februaryб1994. № 4038–XII. URL: http://www.zakon.rada.gov.ua [in Ukrainian].

However, in our view, in the classification of forensic economic expertise, priority should be given to the criteria that characterize the study itself. At the same time, a dominant role among the research features should be given to such a feature as the subject of the research and its tasks. Other features of the study may play an additional role in developing the classification of forensic economic expertise.

In the legal acts of Ukraine and other countries of the post-Soviet space, these issues have already been highlighted. Thus, the Instruction on the appointment and conducting of forensic examinations and expert studies suggests that the main types of expertise are: forensic, engineering, technical, commodity research, expertise in the field of intellectual property, psychological, art studies, environmental, military.

In view of the fact that the majority of existing types of forensic examinations provide for the following distribution to a sufficiently diverse range of independent studies that require the use of different specialized knowledge, in our opinion, a broader classification scheme should be used: "Class — Genus — Types". This approach creates conditions for the transformation of individual examinations in the classification system, both with increasing their level, and vice versa. A striking example of such a transformation is the development of forensic economic expertise over the past 10–15 years, during which traditional forensic accounting expertise was transformed into a judicial economic solution that addresses a wider range of tasks and reduced its classification level[1].

Since the subject matter of the research and the task assigned to it are chosen as a classification feature, it is necessary to organize their grouping for the development of a classification model of forensic examinations. It should be noted that the assignment of expertise to the examination of a particular kind is carried out on the main task that they solve. For example, in the course of performing tax expertise often there is a need for accounting analysis, which is attributed to another kind of forensic examination. But, when its main task is to confirm the amount of tax deductions, it should be classified as a kind of tax expertise.

Proceeding from the existing expert practice, it is possible to identify such large groups of expert tasks that will form the form of forensic economic expertise:

— examination of accounting;

— expert assessment of pricing;

[1] Kapustnyk K. V. *Khomutenko A. V. (*2007) *Klassifikacija sudebno-jekonomicheskih jekspertiz v uslovijah transformacii jekonomicheskoj sistemy gosudarstva. Kriminalistika i sudebnaja jekspertiza: nauka, obuchenie, praktika : sb. nauch. tr*. [Classification of forensic economic examinations in the conditions of transformation of the state economic system. Forensic science and criminalistics. science, training, practice: Collection of scientific papers]. Vilnius, p. 222–225 [in Russian].

— examination of taxation;

— expert examination of the financial condition of the enterprise;

— expert examination of banking operations, securities transactions and other financial transactions;

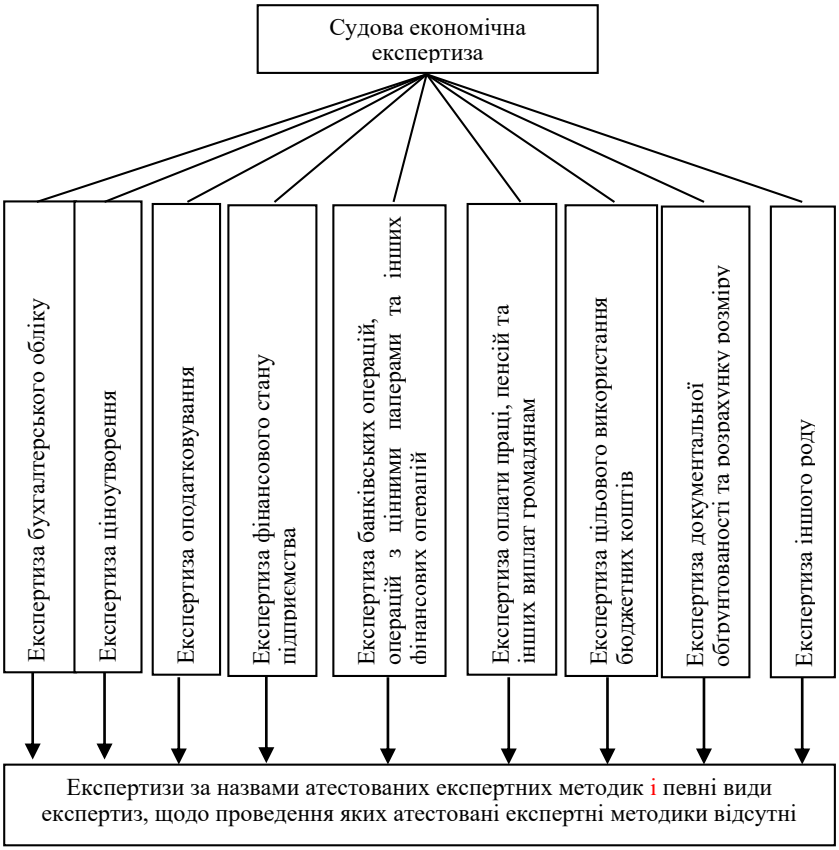
— examination of wages, pensions and other payments to citizens;

— examination of the targeted use of budget funds;

— examination of documentary justification and calculation of the size of losses;

— examination of another kind of economic knowledge.

Proceeding from the above and taking into account the dynamism of the development of economic expertise and their further differentiation, the following principal scheme of the classification of economic examinations is proposed, which is based on the analysis of expert practice (drawing).



The certified expert methods usually contain an algorithm for solving a specific expert task. Consequently, the function of types of forensic examinations can be performed by certified expert methods that will ensure the continuous development and improvement of the proposed classification model.

Classification system of examinations cannot be permanent. Its updating is conditioned, first of all, by the need to solve new tasks concerning objects that had not previously been the subject of examination. Therefore, we propose a basic scheme for the classification of economic expertise, which can then be transformed in the light of new expert knowledge and tasks.

Thus, when classifying forensic examinations, priority should be given to the criteria that characterize the study itself. In this case, the dominant role among the characteristics of the study should be given such a feature as the subject of research and its tasks. Other features of the study may play an additional role in developing the classification of forensic economic expertise.

КЛАСИФІКАЦІЯ СУДОВИХ ЕКОНОМІЧНИХ ЕКСПЕРТИЗ НА СУЧАСНОМ ЕТАПІ РОЗВИТКУ СУДОВОЇ ЕКСПЕРТИЗИ

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Розглянуто питання класифікації судових економічних експертиз на сучасному етапі розвитку судової експертизи. Запропоновано підходи щодо вдосконалення класифікації судових економічних експертиз шляхом включення до складу класифікаційних одиниць нижчого рівня атестованих експертних методик, що забезпечить саморозвиток такої класифікаційної моделі.

Ключові слова: класифікація, вид судової експертизи, судова економічна експертиза, класифікаційні ознаки судової економічної експертизи, експертне завдання, предмет судової економічної експертизи.

КЛАССИФИКАЦИЯ СУДЕБНЫХ ЭКОНОМИЧЕСКИХ ЭКСПЕРТИЗ НА СОВРЕМЕННОМ ЭТАПЕ РАЗВИТИЯ СУДЕБНОЙ ЭКСПЕРТИЗЫ

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Классификация играет важную роль в научном познании. Она реализуется как в форме проведенных исследований, так и в направлениях научных поисков. Нечеткость и неполнота классификации судебных экспертиз иногда приводит на практике к ограничению круга вопросов, которые решаются судебными экспертами, или их неверной интерпретации. Необходимость классификации судебных экономических экспертиз обуславливается тем, что классификация помогает установить наиболее важные, общие для всех экспертиз качества, содействует их более глубокому познанию. Задачей этой работы избрано развитие теории и методологии судебной экспертизы, поэтому в ее границах необходимо выделить как можно больше основных признаков судебной экономической экспертизы. Аттестованные экспертные методики, как правило содержат алгоритм решения конкретной экспертной задачи. Поэтому, функцию видов судебных экспертиз могут выполнять аттестованные экспертные методики, что обеспечит постоянное развитие и усовершенствования предложенной классификационной модели. Классификационная система экспертиз не может быть постоянной. Ее обновление обусловлено, в первую очередь, необходимостью

решения новых задач относительно объектов, которые раньше не были предметом экспертизы. Поэтому предложена принципиальная схема классификации экономических экспертиз, которая может в будущем трансформироваться с учетом новых экспертных знаний и задач. Таким образом, при классификации судебных экспертиз приоритет должен быть отдан критериям, которые характеризуют само исследование. При этом доминирующую роль среди признаков исследования нужно предоставить такому признаку как предмет исследования и обусловленным им задачам. Другие признаки исследования могут выполнять дополнительную функцию при разработке классификации судебных экономических экспертиз.

Ключевые слова: классификация, вид судебной экспертизы, судебная экономическая экспертиза, классификационные признаки судебной экономической экспертизы, экспертная задача, предмет судебной экономической экспертизы.

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ABOUT SOME APPROACHES TO DETERMINATION OF THE COMPANY MARKET CAPITALIZATION CALCULATION IN THE FOLLOWING FINANCIAL AND ECONOMIC EXPERTISE

An economic analysis of the so-called "availability of actual insolvency", has been carried out in the event of a deliberate and false bankruptcy of the organization. The approaches to determining the value of the market capitalization of the economic entity are considered, and an analysis of the structure of capital and the mechanisms of capitalization is presented. The specifics of conducting financial and economic examinations carried out within the framework of both criminal cases on crimes against economic activity and those imposed by courts, which concern determination of the size of the damage caused to the debtor or creditors as a result of economic activity of the subjects, are discussed.

Keywords: deliberate and false bankruptcy, insolvency, economic analysis, market capitalization, financial and economic examination.

An economic analysis, integrated into the computational and analytical methods and techniques of financial and economic expert research, is a system of methods for assessing the comprehensive activities of economic entities. The results of such analyzes in cases of deliberate and false

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bankruptcy are used by law enforcement agencies as the basis of evidence based on accounting documents[1].

During the last decade, the competent bodies that appoint forensic examinations on economic crimes, in the latter case, are of particular interest in approaches to determining the market value of tangible and intangible property of economic entities. In particular, at present, such interest is comprehensively justified in cases of the generation of corporate capital of emerging markets and the development of capital market mechanisms.

It should be noted that in the analysis of insolvency, the structure of the capital of the economic entity, the mechanisms of capitalization, and, in the end, the value of the market capitalization is determined.

Therefore, in reality, the price of a company's share is a capitalized component of income, so it is not defined as the corresponding share of all the capital fixed in the enterprise and is relatively stable. From the statement of the famous German politician and advocate of Austro-Marxist R. Gilfersing, it follows that, being capitalized income from the ordinary level of interest, the price of a stock primarily depends on the amount of profit, and only then from the ordinary level of interest. Thus, according to R. Gilferding, the action is a legal substantiation of the right to income, that is, a debt claims for future production, a certificate of revenue. Since this income is capitalized, it seems as if there was a second capital in the "price form", of the stock. However, the latter is a "fictitious", capital[2].

In spite of the fact that at the moment of issue each share has a certain price for sale (placement price), stock exchanges acquire an independent price, that is, a "rate". In this case, the stock exchange is subject to change, periodically fluctuating under the influence of a number of factors, and as a consequence, during the sale and purchase, the value of shares may change. That is, the capitalization of the company in question is related to the quotation of its shares, which is determined during trading on the stock exchange.

In fact, under capitalization, one can mean either a process or a statistical quantity that characterizes the company's market value at a particular time and, above all, the market value of its net assets. However, there is also a well-known concept that defines the company's capitalization as the total value of all its shares. It is in this situation that there is a need to distinguish mechanisms that change capitalization, from financial mechanisms for determining the size of the capitalization index.

The main mechanisms that influence the change in capitalization are the following: speculative, brand, marketing, environmental, regional, as well as informational.

[1] Sorokotiahyn Y. N. (2015) *Sudebnaja buhgalterija. 2-e izd., pererab. i dop.* [Forensic Accounting 2nd ed. Revised and added]. Moscow : Yurait, p. 22 [in Russian].

[2] Hylferdynh R. (1924) *Finansovyj capital / per. s nem. I. Stepanova* [Financial capital / Translation from German by I Stepanov]. Moscow : St. ed. 1924 [in Russian].

As for the financial mechanisms for determining the size of capitalization, in practice, basically, two mechanisms are used: “stock exchange”, and “appraisal”. In the case of the implementation of the exchange mechanism, the market price is the one on which the last sale or purchase transaction was executed. However, due to the influence of some possible factors, this mechanism has not been widely used because of the inappropriateness of its application in practice. At the same time, stock exchange capitalization is in all cases the magnitude that underlies the actual sale of shares in the company. As for the evaluation mechanism, it is associated with the calculation methods used in the process of assessing the value of the enterprise. In this case, the value of the capitalization estimates or the estimated value is the probable price at which the rated company can be sold. When buying or selling a company or a part of it, this price has an approximate value.

In the case of the first mechanism for determining the market price of a company's capitalization, the appraiser should, as a rule, determine the stock price, that is, the market price. This operation implies the average arithmetic value of the prices of recent transactions conducted with shares in the calculation of the price of one share, bearing in mind, for example, that during the same day several transactions with a changing stock exchange may be conducted (in practice, the price of the last one is also accepted transactions). Then, in the next stage, to calculate the cost of capitalizing the company, the total number of shares in circulation is multiplied by the stock price. From the point of view of transparency of capitalization of the company, the valuation firm may publish a stock exchange in the format of the report so that the shareholders are individually informed about the increase or decrease in the value of their own shares.

In the case of the second mechanism, that is, the company's valuation, or its fundamental capitalization, the problem lies in a different one. Consequently, the settlement mechanism allows the company to obtain the value of its capitalization, which, however, can be differentiated for each depositor who wants to acquire shares of the company.

Usually, in practice, in the evaluation process, there are three main approaches: cost, revenue and comparative, each of which in turn includes various methods.

The first of the approaches — costing, which is based on determining the value of the assets of the company, is fairly widespread throughout the world, with the source data taken from the company's financial statements. However, it should be kept in mind that there are various interpretations that arise when using the source data from the company's financial statements. As an example, we note the book value of assets, which is determined by the calculation of the initial price of accumulated depreciation and accumulated losses as a result of depreciation. However, this cost may differ fundamentally from the real value of assets. Revaluation of assets should normally be carried out by an appraiser who has an independent professional qualification. If

market value cannot be reliably determined, then the valuation is based on the recoverable value of the worn-out object. In this case, fixed assets are recorded at revalued amounts.

In accordance with the requirements of International Accounting Standard (IAS) 16, "Property, Plant and Equipment", revaluation should be carried out with a sufficient frequency so that the carrying amount does not differ materially from the real value at the end of the reporting period. In accordance with this standard, the real cost of some units of fixed assets can be significant, as well as in the volitional form, therefore, their annual revaluation is necessary. RA Government's Resolution *On International Financial Reporting Standards*, dated on: March 11, 2010.

Thus, the book value of assets, their revaluation, depending on the active initiative of the governing administration, can in principle be aimed at the real value of the asset. It is important to emphasize that International Financial Reporting Standards (IFRS) allow / require certain assets to be calculated at real cost or revalued (for example, IAS 16 Property, Impairment, IAS 40, Investment Property, IFRS 9 *Financial Instruments*). According to IFRS, "real value", is the price that, at the date of measurement, results from the normal transaction between market participants, in the sale of an asset or in the transfer of liabilities. In this case, capitalization of loan interest is very important, that is, making it into fixed assets of the initial cost of an object. However, according to IFRS, capitalization of borrowing costs is possible only if there is a likelihood that the company will receive future economic profits and the costs can be reliably calculated.

In order to determine at the moment, the capitalization or market value of a company, it is necessary to consider also what "real value", of the assets will remain in the company, if it will repay all its obligations to third parties (except the founders). In practice, this occurs on the basis of the calculation of net assets, as the difference between the assets and liabilities of the organization, which in the economic literature, as well as normative legal acts is identified with own capital. According to the provisions of the International Standard 32 of Accounting, approved by the RA Government Decree № 235 of March 11, 2010 (paragraphs 16 Ա and 16 Գ): "Assets of an enterprise are those assets that remain after the fulfillment of all its obligations.",

It should be noted that within the framework of the medium and long-term investment strategy, in the case when the analysis is based on the ratio of market capitalization of the company and its net assets, it is considered that the developing and profitable company cannot be estimated below its own net assets value. In support of the valuation of the value of its own net assets, the Q Tobin coefficient can be used, which shows how much the investor is willing to pay for each unit of equity of the company (net assets). This amount is deduced from the ratio of market capitalization of the company and net assets. If the coefficient is

less than one, then the company's assets are underestimated by the market. And the higher the value of the coefficient, the company is considered more promising by the investment community[1].

The second approach to valuation used in Western financial business relations is considered to be more precise, and this is justified by the fact that this approach to determining the market capitalization of a company is related to the orientation of future economic benefits.

At the heart of the concept of financial theory lies the basic definition of value, which is formulated as follows: "The cost of an asset is equal to the present value of all future cash flows generated by this asset"[2]. However, it should be kept in mind that in order to determine the current value of cash flows of an asset, each of its elements should be discounted.

In practice, cash flow forecasting is carried out taking into account existing investment projects or business plans of the company by extrapolating to future cash flows for previous periods. In this case, the indicator of used cash flows is important, not the indicator of the profit received. As a result, the size of the company's capitalization may be different for each investor, since in calculating the cash flows generated by the company, the discount rate is determined based on the personal views of the depositor on the rate of depreciation of the currency, as well as the level of alternative returns and other conditions. This circumstance can be explained by the situation when depositors are ready to purchase shares directly from the exchange.

The essence of the third — the comparative method is that in practice, in the case of orientation to stock quotes, the value of two similar companies under ideal market conditions should not differ. In fact, in order to determine the value of a company, it is necessary to have information on the capitalization of companies of the same type whose value has been determined according to the latest transactions of sale of shares or sales of the whole company. A comparative approach allows us to obtain a certain average amount of capitalization of the company, since in practice, based on speculative expectations, the price of one company's shares may increase.

In addition to the traditional approaches given above, it is also important to note the application of the "primary public offer", approach to IPOs (initial public offering), which in turn includes two of the following types: 1) placing on the stock of additional issued shares (PRO — Primary Public Offering) and (2) Secondary Public Offerings (SPO) (SPO — Secondary Public Offering)[3]. It

[1] *Korporativnye finansy: standart tret'ego pokolenija / pod red. M. V. Romanovskogo, A. I. Vostroknutovoj* (2011) [Corporate Finance: third generation standard / edited by M. V. Romanovskyi, A. Y. Vostroknutova]. SPb. : Piter, p. 447 [in Russian].

[2] Marshall Dzh. F. Bansal V. K. (1998) *Finansovaja inzhenerija: uchebnik* [Financial engineering manual]. Moscow : Infra-M. 1998. 784 p. (first formulated by I. Fisher in 1896) [in Russian].

[3] Kovalev M. Snopkova S. *Pervichnoe publichnoe razmeshhenie akcii (IPO): tendencii i perspektivy. Vestnik associacii belorusskih bankov : sb. nauch.-prakt. statej* [Primary Public Offering (IPO): Trends and aspects. Bulletin of the Association of Belarusian Banks: Scientific Paper Collection] № 12(787). 30.06.2016 [in Russian].

should be noted that in the first case, the capitalization of the company increases due to the attraction of additional capital, and in the second case, the process of determining the value of capitalization, which may include, in particular, the result of the negative mood of the shareholders in relation to the company, which occurs solely with the help of exchange speculative mechanisms.

At present, it is believed that the income received by the company depends not only on the generation of its own material assets, but also on the corporate culture of the company, the efficiency of management, the qualifications of the employees of the company, etc. For example, intangible assets include the trademark and the company's brand, which are considered "marketing assets".

The brand mechanism, closely linked to the effect of changing the size of the company's capitalization, is able to expand its sales. In the event that the company's brand is an intangible asset, the brand mechanism can also be identified with the concept of "franchising", which is the "hire", of a trademark or brand. In this case, the franchisor, which acquires the right to use a well-known brand, increases its value in comparison with similar companies that do not have such a right.

Considering the ecological mechanism of the capitalization of the company, we note that the latter is connected with the concept of "capitalization of the region", which may be expressed, for example, in the following: the legislative or environmental regulatory barriers adopted in the region can lead to the development of a tourism and entertainment business in the region and, consequently, to increase the capitalization of companies operating in the region.

It should be added that the change in the size of the company's capitalization is also closely related to the information mechanism, which is based on the growth of transparent company activity. The latter, based on the interests of investors, is reflected mainly in the publication of all financial information on the company's capitalization. Obviously, if investors are sure of the company's steady development, and are informed about possible actions of the company's management, the cost of the company will grow due to new investments, taking even low-yielding conditions into small risks. This means that the company should maintain reliable and thorough accounting, on the basis of which it will publish its financial and tax reporting, as well as periodically provide its participants or shareholders with documents governing the strategic development of the company. On the basis of such information, investors will be able to predict the prospects of the company's development, and will also be ready to purchase shares or shares at a higher price.

Thus, in the course of financial and economic examination, the study of the mechanisms of capitalization of economic entities and the determination of the market value of capitalization lead to the necessity of forming a multilayered and labor-intensive system of actions. The decision of the debatable problem can only be realized if, as a result of the economic analysis,

the so-called concept of "the existence of actual insolvency", the main causal factors affecting the market value of the company and the magnitudes of their influence will be considered separately. The proposed approach will allow the competent authorities initiating expert studies to have evidence base for causing damage to a large extent to the debtor or creditors as a result of deliberate or false bankruptcy.

ПРО ДЕЯКІ ПІДХОДИ ДО ВИЗНАЧЕННЯ ВАРТОСТІ РИНКОВОЇ КАПІТАЛІЗАЦІЇ КОМПАНІЇ ПРИ ПРОВЕДЕННІ ФІНАНСОВО-ЕКОНОМІЧНОЇ ЕКСПЕРТИЗИ

К. О. Маміконян

Виконано економічний аналіз так званої «наявності фактичної неплатоспроможності» в разі навмисного чи фіктивного банкрутства організації. Розглянуто підходи до визначення величини вартості ринкової капіталізації господарюючого суб'єкта, наведено аналіз структури капіталу й механізми капіталізації. Підкреслено, що інтерес до цієї проблеми виправданий з урахуванням генерації корпоративного капіталу ринків, що розвиваються, і розвитку механізмів ринку капіталу. Розглянуто основні механізми, що впливають на зміну капіталізації: спекулятивні, брендові, маркетингові, екологічні, регіональні, а також інформаційні. Показано, що на практиці прогнозування грошових потоків здійснюється з обліком існуючих інвестиційних проектів або бізнес-планів компанії шляхом екстраполяції на майбутнє грошових потоків за попередні періоди, при цьому важливий показник використовуваних грошових потоків, а не показник отриманого прибутку. Особливо відзначено специфіку проведення фінансово-економічних експертиз, виконуваних у рамках як кримінальних справ стосовно злочинів, спрямованих проти економічної діяльності, так і призначуваних судами, які стосуються визначення розміру збитку, заподіяного боржникові або кредиторам у результаті економічної діяльності суб'єктів. Розв'язання дебатуємої проблеми може бути реалізоване тільки в тому разі, якщо в результаті економічного аналізу так званого поняття «наявність фактичної неплатоспроможності» основні причинно-наслідкові фактори, що впливають на ринкову вартість компанії, і величини їх впливу будуть розглядатися роздільно. Таким чином, пропонований автором підхід дозволить компетентним органам, що ініціюють проведення експертних досліджень, мати сукупність доказів щодо заподіяного збитку у великому розмірі боржникові або кредиторам у результаті навмисного або фіктивного банкрутства.

Ключові слова: навмисне й фіктивне банкрутство, неплатоспроможність, економічний аналіз, ринкова капіталізація, фінансово-економічна експертиза.

О НЕКОТОРЫХ ПОДХОДАХ К ОПРЕДЕЛЕНИЮ СТОИМОСТИ РЫНОЧНОЙ КАПИТАЛИЗАЦИИ КОМПАНИИ ПРИ ПРОВЕДЕНИИ ФИНАНСОВО-ЭКОНОМИЧЕСКОЙ ЭКСПЕРТИЗЫ

К. О. Мамиконян

Проведен экономический анализ так называемого «наличия фактической неплатежеспособности» в случае преднамеренного и ложного банкротства организации. Рассмотрены подходы по определению величины стоимости рыночной капитализации хозяйствующего субъекта, приведен анализ структуры капитала и механизмы капитализации. Обсуждена специфика проведения финансово-экономических экспертиз, выполняемых в рамках как криминальных дел

по преступлениям направленным против экономической деятельности, так и назначаемых судами, которые относятся к определению размера ущерба, причиненного должнику или кредиторам в результате экономической деятельности субъектов.

Ключевые слова: преднамеренное и ложное банкротство, неплатежеспособность, экономический анализ, рыночная капитализация, финансово-экономическая экспертиза.

EXPERT PRACTICE: METHODICAL APPROACHES TO SOLVING PROBLEMS OF ECONOMIC AND COMMODITY RESEARCH

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ISSUES RELATED TO RENT ARREARS DETERMINATION ACCORDING TO THE PURPOSE OF PREMISES

Performing specifics of forensic economic researches related to rent arrears determination according to the purpose of premises are considered. Application correctness of rental rates according to the purpose of premises and their influence on the amount of debt is determined.

Keywords: forensic economic examination, rent arrears, rental rates according to the purpose of premises.

Despite considerable state attention to rent relations and reforms in land, housing, business sectors and adoption of regulatory acts aimed at establishing and normalization of real estate rent (lease) relations; modern relations in the field of concluding and operating rental (lease) agreements for real estate is characterized by contradictions and instability. Consequently, this negatively affects the development of economic relations with the use of rental real estate (lease) agreements, causing offenses and disputes between the parties of these agreements.

Today, one of the most common types of disputes concerning real estate lease agreements are disputes regarding the establishment of a valid amount of rent arrears or lease agreement termination.

Object transfer for rent is performed on a paid basis, since rent is connected with cash flows formation that should be distributed among the subjects of rent relations. Since in a market economy conditions the property

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use in the of entrepreneurial activity process involves fixed assets amortization, receipt of profits, resources formation for their restoration or redemption. So, payment calculation of objects using by the tenant is important. Such a payment reflects the relationship between the tenant and the lessor regarding cash flows distribution associated with rental objects using.

Rental fee is money paid by a tenant to a lessor for rental object using. Rental fee amount, procedure, terms and forms of payment are stipulated in the lease agreement. Provision of rental fee in full and in due time is the tenant's obligation. Rental fee amount can be changed only by agreement of the parties.

According to Art. 19 of the Law of Ukraine *On Lease of State and Communal Property*, from 10.04.1992 № 2269–XII [1](further — the Law № 2269–XII) procedure of rental calculation and proportions of its distribution between appropriated budget, lessor and property holder are determined: for communal property objects by local administration.

In accordance with Art. 19 of the Law № 2269–XII "rental fee, determined according to appropriate procedure is using like opening price while definition of tenant on competitive base". According to lease agreement a can be required to use the leased object for its intended purpose in accordance with the profile of enterprise production activity whose property is leased and to produce products within scope necessary to meet region needs. The tenant is obliged to use and store the leased property in accordance with terms of contract and prevent it from damage, spoilage.

If the tenant did not pay rent in violation of the terms of contract, the rental object was not used for the purpose, without lessor compliance or a rental object is transferred for use by third party, a redevelopment of premises without corresponding permissions was made, no major repairs are performed (if this contract obligation the is entrusted to the tenant), then each of these circumstances established by court is a separate reason for agreement termination in court through the initiative of lessor.

The correct calculation of rental rate depends on the correct definition of the rental rate for the use of real estate in accordance with the intended purpose. Thus, if the lessor, for example, has transferred the use of premises for a certain intended purpose, and the rental rate in the agreement is determined not according to the intended purpose, which entails incorrect calculation and accordingly rent transfer, this circumstance can represent a reason for contract termination in court on the initiative of the tenant according to Art. 784 of the Civil Code of Ukraine. In this case, forensic

[1] *Pro orendu derzhavnoho ta komunalnoho maina : Zakon Ukrainy* [On Lease of State and Communal Property the Law of Ukraine] dated on: 10.04.1992 № 2269–XII (with amendments and supplements). URL: http://www.zakon.rada.gov.ua.

scientists are asked questions regarding confirmation of rental arrears number of premises, purpose and methodology for rent calculation is specified in the lease agreement; however, the lease agreement can incorrectly apply the requirements to calculating methodology of rental fee regarding the established rental rates according to the destination.

Let's consider matter essence using example of a separate agreement and a separate procedure for rent calculating.

According to lease agreement of uninhabited premises (building) conditions, the lessor (Office of Communal Property and Privatization of the Department of Economy and Communal Property of the Kharkiv City Council) transfers and the tenant (Kharkiv private educational and training complex) accepts as timely paid using uninhabited premises which have 1000 m² of total area (further "property", which belongs to Kharkiv communal property on the balance of Department of Education of the Administration of the Kiev district of the Kharkov City Council, further named "Balance holder"). The property is leased for location a private educational institution.

Rental fee is determined on the basis of procedure for rental fee calculation of property that is located in the communal property of Kharkov territorial community and distribution offer, approved the decision of the 12th session of the Kharkiv City and 6th convocation from 23.12.2011 № 566/11 (hereinafter referred to as Method). Rental rate is 10 %. 30 % of rental fee is transferring: current balance holders account, 70 % — to municipal budget.

The contract stipulates that rental amount can be changed upon the demand of one of the parties in case of a change in the Procedure of its calculation, centralized prices and tariffs approved in accordance with the established procedure that affect directly the rent calculation. Using of leased property according to its purpose and terms of agreement. Amendments and additions to the lease agreement are considered by the parties within 10 days and are formalized by additional agreements, which are integral parts of the contract.

According to the additional agreement № 1 to the above-mentioned lease agreement points regarding area determination of premises and the purpose of use stated in the following wording: property is transferred to rent for the purpose of use: private school — 50 m^2; kids club — 150 m^2, Preschool institution — 800 m^2. The rental rate is 10 %, 5 %, and 1 % respectively. That is the intended purpose (purpose of using) of rental property by the additional agreement was changed, what is the basis for rental rate decrease and respectively to the amount of rental fee, which tenant should pay — Kharkov private educational and training complex as rent of uninhabited premises with total area is 1000 m².

However, having analyzed the Procedure, a forensic scientist concludes that in the additional agreement №1 to the lease agreement, the rental rate of 1 % applied to the preschool institution location does not correspond to the

Procedure. This Procedure is designed to improve and improvement a single organizational-economic mechanism of rental property charging that is located in the communal property of the territorial community of the Kharkiv city. which are concluded by authorized authority of Kharkiv City Council — of communal property and privatization Administration of the Department of Economics and Communal Property of the Kharkiv City Council (further — Authority) and according to its permission — communal enterprises, institutions, foundations, to which property was transferred to economic and operational management.

The rental fee according to this Procedure is calculated as follows. Annual rent amount is defined. Based on annual rent amount, the rent amount is established according to base month of the rent calculation — the last month for which the inflation index is defined, which is fixed in the lease agreement. Taking into account the rent amount for the base month of the rent, the rent amount for the first and subsequent months of the rent is calculated.

Rental rate for using real estate located in the communal property of Kharkov territorial community is defined depending on the purpose that tenant uses the property. The size of this rate is from 1 to 100 %. The highest rate (100 %) applies to casinos, other gambling establishments, gambling machines. The lowest rate (1 %) — for location of: social protection institutions for homeless citizens, homeless children and institutions, intended for temporary or permanent residence of elderly citizens and disabled people; state and communal out-of-school education institutions (except health institutions for children and youth) and preschool educational institutions; institutions of social service for families, children and youth, which contained at the expense of state budget, in particular centers of social and psychological rehabilitation of children, social dormitories for orphans and children, who deprived parental guardianship, social mother and child centers, centers of social and psychological help, centers of rehabilitation for children and youth with functional restrictions, centers for HIV-infected children and youth and accommodation of creative unions, public, religious and charitable organizations on square that is not used for business activity; location of public disabled people organizations on square that is not used for business activity and which is not more than 100 m².

According to the addition # 2 for rental rate Procedure for using of real estate which is a communal property of Kharkiv territorial community respectively to intended purpose appointment are composing:

— location of private educational institution — 10 % (art. 14);

— location of children's clubs — 5 % (art. 21);

— location of state and communal out-of-school education institutions (except health institutions for children and youth) and preschool educational institutions — 1 % (art. 25).

In other words, based on the data on the established rental rates introduced in Appendix № 2 to the Method:

— for location of children's clubs regarding that rate is applied — 5 %; no restrictions on ownership forms are established — private, communal or state;

— the rental rate of 1 % for a year should be applied only to educational institutions (preschool, out-of-school) only with the state or communal form of ownership.

According to the Law of Ukraine *On education*, from 05.09.2017 № 2145–VIII (further– the Law № 2145–VIII) the education system –is the totality of education components, levels and education degrees, qualifications, educational programs, educational standards, licensing conditions, educational institutions and other subjects of educational activity, participants in the educational process, educational authorities, and regulatory and legal acts regulating relations between them.

According to Art. 10 of the law № 2145–VIII the essential components of the education system are: preschool education; complete general secondary education; out-of-school education; specialized education; professional technical education; specialized professional education; higher education; adult education, including postgraduate education.

According to Art. Law of Ukraine *On Preschool Education* dated on: 11.07.2001 № 2628–III[1] (hereinafter referred to as Low № 2628–III) system of the out-of-school education are: preschool education regardless of subordination, types and forms of ownership; research and teaching institutions; education authorities; education and family education.

According to part 1 of Art. 15 of the Law № 2628–III the property form of preschool education institute determined by legislation. According to part 2 of Art. 15 of this Law the state status has an institution of preschool education, based on the state form of property. According to part. 3 article 15 of the Law № 2628–III the communal status has an institution of preschool education, based on communal form of property. According to part 4 of Art. 15 of this Law the state status has an institution of preschool education, based on the private form of property.

According to part. 2 of Art. 12 of The Law of Ukraine *About extracurricular education*, from 22.06.2000 № 1841-III the state status has an institution of out of school education, based on the state form of property; the communal status has an institution of out of school education based on communal form of property; the private status has an institution of out of school education based on the private form of property.

[1] *Pro doshkilnu osvitu : Zakon Ukrainy* [On Preschool Education the Law of Ukraine] dated on: 11.07.2001 № 2628–III (with amendments and supplements). URL: http://www.zakon.rada.gov.ua.

In other words, “state and communal”, is a form of ownership, and “out-of-school and preschool”, are types of educational institutions that according to the legislation can be state, communal or private ownership.

In the additional lease agreement of non-residential premises (buildings) a single form of ownership: “private”, is defined. Another form of ownership is state or communal in an additional agreement is not defined. Kharkiv Private Educational Complex according to its organizational form is a private organization and the single tenant of premises. Consequently, the preschool educational institution specified in the additional agreement belongs to private ownership form and is included in the list of private educational institutions for which the rent rate is 10 % per year according to the Procedure.

Thus, according to the Procedure:

— for location of a private educational institution, the rental rate of 10 % is applied;

— for renting a children's club (with any form of property) the rental rate of 5 % is applied;

— for location of a preschool educational institution with any other form of ownership, in addition to the communal or state (in this case, the tenant of the premises according to its organizational form is a private organization), the rental rate 10 % of is applied.

Application of rental rate in an additional lease agreement of non-residential premises while charging a rental rate to the tenant that does not correspond to the intended purpose of leased premises specified in the Procedure can lead to underestimation and non-transfer of the rent to the lessor and to the city budget.

Thus, while resolving similar issues regarding the confirmation of rent arrears of communal property, due to which disputes arise, it is necessary to closely monitor determined rental rates according to the purpose of premises. Offered analysis of current legislation of Ukraine regarding determination of application legality of rental rate can help while performing forensic researches related to establishment of real arrears amount while resolving litigious economic disputes.

ПИТАННЯ, ЩО ВИНИКАЮТЬ ПРИ ВИЗНАЧЕННІ РОЗМІРУ ЗАБОРГОВАНОСТІ З ОРЕНДНОЇ ПЛАТИ ВІДПОВІДНО ДО ЦІЛЬОВОГО ПРИЗНАЧЕННЯ ПРИМІЩЕННЯ

Т. В. Марченко

Розглянуто особливості проведення судових економічних досліджень, пов’язаних з визначенням заборгованості з орендної плати за використання приміщень. Визначено правильність застосування орендних ставок відповідно до цільового призначення приміщень і їх вплив на розмір заборгованості.

Ключові слова: судова економічна експертиза, заборгованість з орендної плати, орендні ставки відповідно до цільового призначення приміщення.

ВОПРОСЫ, ВОЗНИКАЮЩИЕ ПРИ ОПРЕДЕЛЕНИИ РАЗМЕРА ЗАДОЛЖЕННОСТИ ПО АРЕНДНОЙ ПЛАТЕ В СООТВЕТСТВИИ С ЦЕЛЕВЫМ НАЗНАЧЕНИЕМ ПОМЕЩЕНИЯ

Т. В. Марченко

Значительная часть споров между сторонами в хозяйственной деятельности возникает по вопросу установления действительного размера задолженности по аренде коммунального имущества. Одна из причин этих споров является неправильно определенная и примененная арендная ставка при определении размера арендной платы. Размер и условия внесения арендной платы устанавливаются в договоре аренды между арендодателем (собственником) и арендатором, а основанием для начисления арендной платы за имущество, которое сдается в аренду, является договор аренды такого имущества. Применение арендной ставки при начислении арендной платы арендатору, которая не соответствует целевому назначению арендованного помещения, может привести к недоначислению и соответственно к неперечислению арендной платы арендодателю и в городской бюджет. В статье рассмотрен случай применения арендных ставок при заключении договора аренды и показано как может измениться размер задолженности по арендной плате при неправильно определенной ставке арендной платы. Приведен анализ действующего законодательства Украины, который касается правильности их применения, а именно, проанализированы методические рекомендации об установленных арендных ставках за использование помещений в соответствии с целевым назначением на примере «Методики расчета арендной платы за имущество, которое находится в коммунальной собственности территориальной громады г. Харькова и пропорции ее распределения», утвержденной решением 12 сессии Харьковского городского совета 6-го созыва от 23.11.2011 № 566/11 и конкретного договора аренды. Приведенный анализ действующего законодательства Украины о применении ставок арендной платы может помочь при проведении экспертных исследований, связанных с установлением действительного размера задолженности по арендной плате при решении судебных хозяйственных споров.

Ключевые слова: судебная экономическая экспертиза, задолженность по арендной плате, арендные ставки в соответствии с целевым назначением помещения.

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SOME FEATURES OF DETERMINING THE VALUE OF EQUIPMENT AND MACHINES WITH TAKING INTO ACCOUNT OF REDUCING THE QUALITY OF WOOD

The list of the initial data necessary for indication in the acts of the technical state of the equipment, which is necessary for carrying out of examinations, is provided. Some features of the definition of the percentage

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of wear, the cost of equipment and machines, taking into account quality deterioration from wear, are considered.

Keywords: forensic examination, statement of technical condition, physical, functional and economic deterioration.

One of the objects of commodity research, which determines the value of which have certain features and complexity, are equipment and machines of different spectrum of purpose, especially that which was in operation and has a certain percentage of wear. Equipment is quite frequent objects of commodity research, the value of which is determined within the framework of criminal proceedings, economic and civil cases, at the appeals of business entities (valuation of property when it is transferred to other owners, allocation of property, etc.).

Differences in the conduct of this kind of expertise are conditioned by the fact that the expert-commodity expert, within the limits of his special knowledge, cannot assess the technical condition, the presence of defects, possible retrofitting and the conformity of equipment and machinery to the requirements of certain DSTU (compared with the possibility of conducting research on the conformity of DSTU, for example, footwear, objects clothes). Determining the efficiency of equipment and machinery, the percentage of wear is one of the main factors that affect the formation of market prices and their definition within all approaches to property valuation.

To establish the technical condition of equipment and machines, an expert draws up a request for the involvement of specialists who have special knowledge in a particular industry for the inspection of equipment and machinery and the drawing up of an act of technical condition, or conducting a comprehensive examination of the definition of product characteristics, the state of equipment and machinery, the percentage of wear and the value of the said property.

Drawing up of acts of a technical condition or conclusions of complex research, assists the expert in carrying out the identification of research objects (a comprehensive study of the state of the object of evaluation), because this allows the expert merchant to obtain initial data on the property at the date of the survey, and also receives data on retrospective state of property. Also, when carrying out a comprehensive inspection of equipment and machinery, and in the further development of an act of a technical condition, the expert, with the help of specialists, receives information regarding the identity between the property provided and the technical documentation provided, accounting records, etc. Because, as the expert practice shows, there are cases where the technical characteristics, equipment and equipment do not coincide with the accompanying documents.

According to the experience of experts in conducting this type of research in the specialists involved in the determination of the technical condition of

objects, the following questions arise: what particular data should be indicated in the certificate of technical condition, so that in the future experts could use them in conducting commodity research and determining the value of the property, and that the terminology used by specialists, the category of technical status evaluation coincided with the terminology used by experts in commodity research in expert practice. Specialists who take part in the study regarding the presence of equipment and machinery wear, also, in addition to the characteristics and percentage of physical wear, if any, indicate to the expert-merchant functional and / or economic types of wear.

According to the definitions of the National Standard № 1 "General Principles of Appraisal of Property and Property Rights", :

— deterioration(depreciation) — loss of value of property compared with the value of new property. Demolition by signs of its occurrence is divided into physical, functional and economic (external). Physical and functional wear may be technically eliminated, and such that is not eliminated, or elimination is economically inappropriate;

— physical wear — deterioration due to partial or complete loss of the original technical and technological qualities of the object of evaluation;

— functional wear — demolition, caused by partial or complete loss of the original functional (consumer) characteristics of the object of evaluation;

— economic (external) wear — wear, due to the influence of socio-economic, environmental and other factors on the object of evaluation.

The value of the total wear and tear of equipment and machines is determined by the formula

$$\sum = 1 — (1 — ВФ/100)\cdot(1 — ВФЗ/100)\cdot(1 — BE/100),$$

where ВФ — percentage of physical wear; ВФЗ — percentage index of functional wear; BE — percentage of economic depreciation.

Experts-merchants on the basis of experience and study of special literature, a list of data that, in their opinion, should be indicated in the act of technical condition of equipment and machines, in order to determine in the future their market value:

— inventory number;
— name (mark);
— appointment;
— completeness (equipment composition, mass);
— date of acquisition (release date);
— terms of operation (intensity of operation);
— cost at the date of purchase;
— book value;
— manufacturer;
— basic technical characteristics;
— complete set, availability of equipment;

— technical condition;

— check of workability;

— information about repairs, expenses for repairs;

— conclusions about the possibility of further exploitation.

Now, let's consider in more detail the individual points of the specified act of technical condition, why they are foreseen and how to use them later in the assessment.

The certificate of technical condition is drawn up by specialists in a particular industry in accordance with the equipment and machines provided, preferably in the number of two or three persons, in particular, a mechanical engineer, a technologist, an equipment installer, etc.

Name, make, manufacturer, manufacturer and main characteristics — these data are very important for identifying and identifying the name of equipment and machinery, since there are often cases where the equipment in service does not have a factory identification plate or a technical passport (operating manual). With the help of these data, the expert-commodity scientist conducts a comparative analysis with comparable products for the establishment of comparative objects.

For example, the act states:

— name: hydraulic press;

— purpose: for execution of pressing — disassembly, firmware, calibration, straightening, sheet stamping without deep drawing;

— manufacturer; Orenburg, Russia;

— main technical characteristics; — basic technical characteristics: nominal pressure of the press — 100 kN (10 t); the largest stroke of the rod (slider) — 400 mm; Electric motor of the main drive — 3 kW (1500 rpm); dimensions of the press (length, width, height) — 1450 × 810 × 2285 mm.

The indicated data, even in the absence of a data model expert in the commodity scientist, will help in defining analog objects in the framework of the comparative approach to the evaluation.

Data on the value at the date of acquisition (historical value) can be used by an expert to calculate the cost of equipment and machines by the method of updating the price by the formula:

$$B_B = B_I \times K_{РЦ},$$

where B_B — cost of reproduction of the object of evaluation; B_I — historical value; $K_{РЦ}$ — is a coefficient that takes into account the change in the price level from time to date to the date of valuation in the producing country[1].

[1] Hokhberh I. I. (2014) *Otsinka mashyn i obladnannia: navch.-prakt. posibnyk / za red. M. L. Lapishko* [Estimation of machines and equipment: tutorial / edited by M. L. Lapishko]. Kyiv (Library of the Ukrainian Society of Appraisers). P. 81 [in Ukrainian].

Terms of operation (intensity of operation) — the equipment could be used throughout the term from the date of issue, but could be canted (in working condition) and was stored or insignificant operating life.

For example: the date of the acquisition of the press — 1995. The operation was from 1995 to 2002. Then, due to the lack of production necessity, it was in a preserved state until the estimation date (2017).

Issue date (date of acquisition) — data are used both to determine the physical, functional and economic percent of wear and tear of equipment and machines, as well as to analyze objects of comparison.

Completeness (equipment warehouse, mass), availability of spare parts. equipment — these data are also important because the equipment can be disassembled, there are no main parts, no software, engines, etc. There are cases when, at the date of evaluation of the machine or press do not have any equipment, in addition to the floor, no spare parts, accessories. Then, data on the mass of the product can be used to determine the cost of equipment at the price of scrap.

Performance Testing — This item specifies data on the inspection of the performance of products at the time of inspection, the ability to connect, perform basic functions of machines and equipment, as well as reasons for refusal of work (engine failure, software, etc.).

Information on repairs, repair costs indicate which repairs were carried out on the equipment under investigation throughout the service life (replacement or repair of main parts, rewinding of the engine, retrofitting, etc.), or information is provided on the need to carry out repairs of equipment in an idle state, the cost of parts and repair services (when the cost of repairs and restoration works exceeds the final cost of the product at the valuation date, the conduct of such works is economically inadequate).

Conclusions on the possibility of further exploitation (according to the characteristics of the technical condition of equipment and machines, which is indicated by specialists). Possibilities of use by experts-merchants of these conclusions in the evaluation of property: it is advisable to use the characteristics of physical wear, which is indicated in the methodological literature on property valuation. Experts are advised to use the characteristics of physical wear, indicating the state of the equipment, which is indicated in the table, and provide such data to specialists, in order to understand the results of the survey when determining the technical state of equipment and machinery.

Table

The value of the coefficients of wear depending on the state of the equipment

State equipment	Characteristics of the physical condition	Range coefficients wear, %
Distinctive	New, practically unused equipment in excellent condition	0–5
Very beautiful	New or completely refurbished (reconstructed) equipment that was in operation. In a very good condition	5–15
Good	Equipment in service and in good condition. Defects and malfunctions that are, are insignificant	15–35
Satisfactory	The equipment in service and in a satisfactory condition is suitable for operation, but requires repair or replacement of non-main units, elements	35–60
Conditionally suitable	The equipment in service is in a state suitable for further use, but which requires major repairs or replacement of the main units, elements	60–80
Unsatisfactory	Equipment to be fully reconstructed for prolonged operation	80–97.5
Unsuitable for use (scrap)	Equipment for which there are no acceptable prospects for sale, except for the cost of materials	97.5–100

Experts do not always indicate the percentage of wear or the coefficient of equipment or machinery, but it is desirable to indicate a rating category that corresponds to a certain numerical value. For example, it is stated: “Press hydraulic RNM-63 in operation since 2002, completely complete, preventive works were carried out in good condition”, and according to these data, the expert-commodity expert in determining the cost of the press takes the percentage of wear of 15–35 %.

This percentage of wear is used by the expert in determining the object of the study within the scope of the cost approach, which involves the following sequential actions:

— determination of the cost of replacement or reproduction of the object of evaluation;

— analysis of the technical condition of the object of evaluation to determine the size of the wear.

The cost of property, taking into account depreciation (depreciation), is determined by the formula

$$C = C_{поч.} — (C_{поч.} \times 3/100),$$

where C — cost of property taking into account depreciation; $C_{поч.}$ — initial value of the property; 3 — percentage of wear during the period of operation[1].

The above data is based on reference materials and practical experience and is offered to experts as one of the types of determination of the cost of equipment, taking into account depreciation, obtaining a list of output data for conducting commodity expertise.

ДЕЯКІ ОСОБЛИВОСТІ ВИЗНАЧЕННЯ ВАРТОСТІ ОБЛАДНАННЯ ТА МАШИН З УРАХУВАННЯМ ЗНИЖЕННЯ ЯКОСТІ ВІД ЗНОСУ

В. М. Губарева

Надано перелік вихідних даних необхідних для зазначення в актах технічного стану обладнання, що потрібні для проведення експертиз. Розглянуто певні особливості визначення відсотка зносу, вартості обладнання та машин з урахуванням зниження якості від зносу

Ключові слова: судово-товарознавча експертиза, акт технічного стану, фізичний, функціональний і економічний знос.

НЕКОТОРЫЕ ОСОБЕННОСТИ ОПРЕДЕЛЕНИЯ СТОИМОСТИ ОБОРУДОВАНИЯ И МАШИН С УЧЕТОМ СНИЖЕНИЯ ИХ КАЧЕСТВА ОТ ИЗНОСА

В. Н. Губарева

Одними из объектов товароведческого исследования, определение стоимости которых имеют определенные особенности и сложности являются оборудование и машины различного назначения, особенно такого, которое было в эксплуатации и имеет определенный процент износа. Определение работоспособности оборудования и машин, процента износа является одним из основных факторов, влияющих на формирование рыночной цены и ее определение в пределах всех подходов к оценке имущества. Согласно опыту судебных экспертов при проведении этого вида исследований у специалистов, которых привлекают для определения технического состояния, возникают вопросы: какие именно данные необходимо указывать в акте технического состояния, чтобы в дальнейшем эксперты могли их использовать при проведении товароведческой экспертизы и чтобы терминология, которую используют специалисты, категории оценки технического состояния совпадали с терминологией оценщиков. Экспертами-товароведами на основании опыта работы и изучения специальной литературы предложен перечень таких данных. Это: инвентарный номер, наименование (марка), назначение,

[1] *Metodyka vyznachennia vartosti maina / A. I. Lozovyi ta in.* (2004) [Methodology for determining the value of property / [A. I. Lozovyi and others]. Kharkiv : KhRIFE, 112 p.

комплектность (состав оборудования, масса), дата приобретения (дата выпуска), срок эксплуатации (интенсивность эксплуатации), стоимость на дату приобретения, балансовая стоимость, завод-изготовитель, основные технические характеристики, техническое состояние, проверка работоспособности, сведения о ремонтах, расходы на ремонт; выводы о возможности дальнейшей эксплуатации. Установленный процент износа эксперт товаровед использует в рамках затратного подхода, который предусматривает такие последовательные действия: определение стоимости замещения или воспроизведения объекта оценки и анализ его технического состояния для определения размера износа и дальнейшего проведения расчетов в рамках этого подхода. Коэффициент пригодности объекта оценки используется экспертом-товароведом при определении стоимости объекта оценки в рамках сравнительного подхода при выборе объектов сравнения.

Ключевые слова: судебно-товароведческая экспертиза, акт технического состояния, физический, функциональный и экономический износ.

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FEATURES OF DEFINITION OF MARKET VALUE OF EQUIPMENT USED AT NUCLEAR POWER PLANTS

In determining the market value of equipment used in nuclear power plants, the expert-commodity expert faces a dilemma with the election and justification of the methodological approach. Information model is proposed, which allows to improve and improve the quality of the expertise of this research area.

Keywords: nuclear power engineering, equipment, technical identification, cost methodical approach to evaluation, method of updating prices, producer price index.

We will conduct a small excursion on the terms and statistics of nuclear energy: nuclear (atomic) energy is, firstly, a branch of science and technology that develops methods and means of converting nuclear energy into electric and thermal; and secondly, it is an energy sector that uses nuclear energy for electrification and heating.

The share of nuclear energy from total electricity consumption in Ukraine was as high as in August 1998 — 45.42 % 1[1]. By the number of nuclear reactors, Ukraine ranks ninth in the world and fifth in Europe. Ukraine has 4 nuclear power plants (NPPs) with 15 power units, one of which, Zaporizhzhya NPP with 6 power units with a total capacity of 6,000 MW is

[1] *Pro zatverdzhennia Zahalnoderzhavnoi prohramy rozvytku mineralno-syrovynnoi bazy Ukrainy na period do 2010 roku: Zakon Ukrainy* [On approval of the National Program for the Development of the Mineral Resources of Ukraine until 2010 : Law of Ukraine] dated February 22, 2006 № 3458–IV [Electronic resource] LIHA : Zakon ELIT.

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the most powerful in Europe. In 2009, the percentage of nuclear energy accounted for 48 % of the total electricity production in Ukraine[1].

The objects of research for experts in commodity research may include equipment used at power generating units of Ukrainian NPPs, namely: Zaporizhzhya NPP, South-Ukrainian NPP (Mykolayiv oblast), Rivne NPP, Khmelnitsky NPP. In addition, in Ukraine, as well, there are four more unfinished nuclear power plants: Kharkiv APEC, Odessa ATEC, Crimean NPP, Chigirinskaya NPP.

The performance of these examinations is quite original, since the equipment used at nuclear power plants is unique and made for individual orders. In addition, the practical aspects of evaluating the property were not properly covered.

Taking into account the expert practice in determining the market value of equipment used in power generating units of Ukrainian NPPs, experts have the following problems concerning:

— identification of the research object;

— selection of research method;

— substantiation and selection of methodical approaches to property valuation.

Identification of the object of evaluation is a comprehensive study of its condition, which allows obtaining a complete understanding of it not only at the time of evaluation, but also in the retrospective and forecast periods. Identification of a valuation object means establishing an identity between the object in existence and its documentation[2].

For concretization, give an example of the definition of the market value of technological equipment from the expert practice of the Kharkiv Scientific Research Institute, namely: in 2017 an expert examination was carried out on the determination of the market value of the nodes of the power distribution and control equipment (panels of the KTPSN) and the equipment of the electric low-voltage switchgear — the unit block shield of a direct current of 220 V DC in the cabinets and tire bridge. The above sets of equipment are intended for acceptance of electric energy of a three-phase alternating current and its distribution among consumers of security systems of the power unit. The date of assessment is retrospective and does not coincide with the delivery date (2012 and 2013).

The procedure for determining the market value of this equipment included the following steps:

— collecting and studying the technical documentation of the object of evaluation;

[1] URL: https://uk.wikipedia.org/wiki/Ядерна_енергетика.

[2] Hokhberh I. I. (2014) *Otsinka mashyn i obladnannia: navch.-prakt. posibnyk / za red. M. L. Lapishko; Ukrainske tovarystvo otsiniuvachiv* [Assessment of machinery and equipment: tutorial/edited by M. L. Lapishko. Library of the Ukrainian Society of Appraisers]. Kyiv (Library of the Ukrainian Society of Appraisers). P. 25 [in Ukrainian].

— full-scale inspection of the object of evaluation, collection of information about its technical condition;

— analysis of the received data for conducting an independent assessment;

— description of the technical characteristics of the object of evaluation;

— selection of approaches to the calculation of the value of the object of evaluation;

— calculation of the value of the object of assessment for the cost approach;

— coordination of the obtained results;

— registration of examination conclusion.

Since the equipment is specific, its physical examination should be carried out in conjunction with specialists of specialized enterprises for the technical identification of the investigated property (description of the product nomenclature, equipment, actual state). In our case, the technical identification of the provided nodes of the switchgear and control equipment (KTPPS shields) and the equipment of the electric low-voltage switchgear — a single-block mainboard of a direct current of 220 V DC is carried out by a specialist of SE Yuzhnoukrainskaya NPP of the NNEGC "Energoatom".

As a result, the identification is:

— name, model of research objects;

— purpose and principle of action;

— mass and dimensions;

— basic technical characteristics;

— pricing characteristics;

— characteristics of the control system;

— complete set;

— year of manufacture and putting into operation;

— information about the manufacturer;

— the location of the object of evaluation;

— his condition.

The methods used in carrying out this examination were both a general and a separate method of commodity research. A separate method of commodity research is the system of procedures for the knowledge of consumer value of goods and the determination of the laws of its manifestation and preservation[1].

[1] *Osnovy sudovoi ekspertyzy: navch. posibnyk dlia fakhivtsiv, yaki maiut namir otrymaty abo pidtverdyty kvalifikatsiiu sudovoho eksperta/avt.-uklad.: L. M. Holovchenko, A. I. Lozovyi, E. B. Simakova-Iefremian ta in.* (2016) [The Essentials of Forensic Science: Guide for professionals who intend to obtain or confirm the qualifications of a forensic expert/authors/compilers: L. M. Holovchenko, A. I. Lozovyi, E. B. Simakova-Yefremian and others]. Kharkiv : Pravo, p. 256 [in Ukrainian].

Valuation of property can be carried out using well-known methodological approaches: income, comparative and cost. Let us dwell in more detail on the substantiation and selection of the methodological approach to evaluation.

The evaluation of equipment used in nuclear power plants using a comparative approach in this case is rather problematic, since the comparative approach is most often used for those types of equipment that have a developed market of sales and are standard serial equipment.

Comparison of objects is carried out:

— with an exact analogue;

— with an approximate analogue, with the use of correction in the absence of the exact counterpart.

As source information can be: price lists, catalogs of manufacturers, catalogs of dealers, listing sales; bid prices; price indices; information from Internet sources etc.

It should be noted that during the marketing research, we were not able to find analogues that match their technical characteristics with the nodes of distribution and control equipment (KTPPS panels) and electrical equipment of low voltage because the market of equipment for the needs of nuclear power plants is rather closed in our country, this, firstly, is connected with the strategic status of such objects and the increased security system with limited access to them, and secondly, the needs of each nuclear power plant are sufficiently individual, for which are developing their own requirements, which are reflected in the technical specifications. In addition, we have established that on the date of the examination on the territory of Ukraine offers such equipment (offers production under the order) the plant itself — the manufacturer of the equipment that is subject to evaluation. Given that the object of evaluation — equipment kits were custom-made, so there is a specialized property, the market is limited, so we refused to use the expertise in the comparative approach.

Consequently, the use of a comparative approach in this case is impossible because:

— there are no analogs selling equipment;

— insufficient information on sales conditions;

— specialization and uniqueness of equipment.

The assessment of equipment used in nuclear power plants using a return-based approach in our case can also not be realized, since the return approach is not usually used in the assessment of individual units of equipment, but can serve to verify the correctness of the valuation when assets are valued as part of a business.

On the basis of the above, the use of the income approach in determining the market value of the nodes of the distribution and control equipment (panels of the KTPPS) and the equipment of the electric low-voltage

switchgear — a single block circuit board of a direct current of 220 V DC in the cabinets and a bridge in the examination was impossible, as the basis of the income approach is prediction future income of the user and a specific way of using the technological equipment, namely:

— it is difficult to predict the income from the operation of a separate unit of equipment (nodes of distribution and control equipment and equipment of electric low-voltage);

— it is difficult to allocate the income from the operation of a separate unit of equipment from the company's total income.

Justification of the use of cost approach. The cost approach is predominantly used in the assessment, if it is impossible to find an object-analogue, there is no experience of implementing such objects, or the forecast of future incomes is unstable, the environment of realization of the assessed property is very uncertain and success depends on a significant number of factors. The cost approach involves determining the cost of equipment based on the cost calculation required to create or purchase, protect, manufacture and sell the equipment at the time of evaluation. Given the fact that the research provided the necessary inputs, including the information of the manufacturer of the equipment that is the object of evaluation, with regard to their sale price, supply contracts, specifications, dealerships, it is expedient to use a cost approach, namely: defined the cost of reproduction by applying the method of updating the price.

By the method of updating the price, the cost is calculated by the following formula:

$$B_B = B_I \times K_{PII},$$

where B_B — cost of reproduction of the object of evaluation; B_I — historical value; K_{PII} — is a coefficient that takes into account the change in the price level from time to date to the date of valuation in the producing country.

One of the sources of the basic price information in the method of updating the price are: price list, commercial offer, other similar documents, the date of formation of which does not coincide with the date of evaluation[1]. The sources of the base price information (historical value, B_I).) in our calculation used the price information specified in the specifications for the supply contracts. In addition, in our opinion, it is expedient to mention the following limitations in the reliability of the research: “The conclusions of this study are reliable under the following condition: the price information indicated in the sources of the base price information corresponds to the definition of market value in accordance with the National Standard № 1 *General principles of assessment property and property rights*[2].

[1] Hokhberh I. I. Papers mentioned above, p. 81.

[2] *Natsionalnyi standart № 1 «Zahalni zasady otsinky maina y mainovykh prav»: postanova Kabinetu Ministriv Ukrainy vid 10.09.2003 № 1440. Ofitsiinyi visnyk Ukrainy* [According to the definitions of the National Standard №. 1 General Principles of Appraisal of Property and Property

In accordance with the above formula and the specifics of the equipment being evaluated, we have made a decision to use the calculation of the industrial producer price index. The industrial producer price index (PPI) is an indicator of time trends in industrial production, which allows you to track and determine trends in price changes both in terms of economic activity and in the production of specific products. It is used when creating an information base for forecasting and managing the processes of pricing in industry, converting the indicators of the system of national accounts into constant prices and providing an opportunity for conducting international comparisons[1].

Taking into account the fact that the date of assessment of the nodes of the distribution and control equipment (shields of the KTPN) — 14.01.2013, and the base cost (historical value) of the object of valuation is determined on December 15, 2012, when calculating the market value of the equipment under study it is expedient to apply the industrial producers price index in the production of electrical, electronic and optical equipment for December 2012. The relevant information is available on the official website of the State Statistics Service[2]. Consequently, we have calculated the market value of the technological equipment of nodes of power distribution and control equipment (KPPSN shields) as of January 2013 by multiplying the base cost specified in the specification dated 15.12.2012 by the industrial producer price index for the production of electric, electronic and optical equipment for December 2012

Taking into account that the date of the evaluation of the equipment of the electric low-voltage single-circuit board of direct current of 220 V DC in the cabinets and tire bridge is 09.07.2012, and the base cost (historical value) of the object of evaluation is determined on 11.09.2012, when calculating the market value of this equipment it is expedient to use industrial producer price indices for the production of electrical, electronic and optical equipment for July and August 2012, that is, we have carried out a recalculation of the base cost (historical value) at current prices on the date of the estimate, namely dated on: 09.07.2012. The calculation of the market value of this equipment as of July 2012 was carried out by dividing the base cost specified in the specification from 11.09.2012 into the corresponding index of industrial producers' prices for the production of electrical, electronic and optical equipment.

Summarizing the above, we note that in determining the market value of equipment used in nuclear power plants, the expert-commodity scientist must:

— carry out a physical examination in conjunction with specialists of specialized enterprises for the technical identification of the equipment being studied;

— use both general methods and a separate method of commodity research;

Rights: Resolution of the Cabinet of Ministers of Ukraine dated September 10, 2003 №. 1440. Official Bulletin of Ukraine]. 2003. № 37 25 [in Ukrainian].

[1] URL: https://uk.wikipedia.org/wiki/Індекс_цін_виробників.

[2] URL: http://www.ukrstat.gov.ua.

— apply a cost-effective approach to valuation, namely: method of updating prices and indices of industrial producer prices (PPIs).

ОСОБЛИВОСТІ ВИЗНАЧЕННЯ РИНКОВОЇ ВАРТОСТІ ОБЛАДНАННЯ, ЩО ВИКОРИСТОВУЄТЬСЯ НА АТОМНИХ ЕЛЕКТРОСТАНЦІЯХ

І. В. Сабадаш

При визначенні ринкової вартості обладнання, що використовується на атомних електростанціях, експерт-товарознавець наштовхується на дилему з обранням і обґрунтуванням методичного підходу. Запропоновано інформаційну модель, яка дає змогу вдосконалити та підвищити якість виконання експертиз цього напряму дослідження.

Ключові слова: ядерна енергетика, обладнання, технічна ідентифікація, витратний методичний підхід до оцінювання, метод актуалізації ціни, індекс цін виробників.

ОСОБЕННОСТИ ОПРЕДЕЛЕНИЯ РЫНОЧНОЙ СТОИМОСТИ ОБОРУДОВАНИЯ, ИСПОЛЬЗУЕМОГО НА АТОМНЫХ ЭЛЕКТРОСТАНЦИЯХ

И. В. Сабадаш

Выполнение експертиз по определению рыночной стоимости оборудования, которое используется на украинских атомных электростанциях, является довольно сложным процессом, поскольку оно является уникальным, изготовленным по индивидуальному заказу. На сегодня практические аспекты оценки указанного имущества, к сожалению, должным образом исследователями не освещались. Учитывая экспертную практику при определении рыночной стоимости оборудования, используемого на украинских атомных электростанциях, эксперты-товароведы сталкиваются с такими проблемами как идентификация объекта исследования, выбор метода исследования, обоснование и выбор методических подходов к оценке такого имущества. Поскольку оборудование является специфическим, его натурное обследование должно проводиться совместно со специалистами специализированных предприятий для технической идентификации исследуемого имущества (описания товарной номенклатуры, комплектации, фактического состояния). Методы, использованные при выполнении этого вида экспертиз являются как общие, так и частные методы товароведения. Нами рекомендуется использовать при расчете рыночной стоимости затратный подход, а именно применение метода актуализации цены. Затратный подход преимущественно используется при оценке, если невозможно найти объект-аналог, отсутствует любой опыт реализации подобных объектов или прогноз будущих доходов не стабильный, среда реализации оцениваемого имущества очень неопределенная и успех зависит от значительного количества факторов. Таким образом, при определении рыночной стоимости оборудования, используемого на украинских атомных электростанциях, эксперту-товароведу необходимо: проводить натурное обследование совместно со специалистами специализированных предприятий для технической идентификации исследуемого имущества; использовать как общие методы, так и частные методы товароведения; применять затратный подход к оцениванию, а именно метод актуализации цены и использовать индексы цен производителей промышленной продукции.

Ключевые слова: ядерная энергетика, оборудование, техническая идентификация, затратный методический подход к оцениванию, метод актуализации цены, индекс цен производителей.

FORENSIC SCIENCE IN THE FIELD OF INTELLECTUAL PROPERTY

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LEADER-NORTHERN-AMERICAN METHODS FOR RESEARCH OF SUBJECTS AS INTEGRAL PROPERTY OBJECTS (ON THE CONTENT OF US FORENSIC EXPERTS)

The review article presents the history of the creation and specific features of the leading scientific and methodological tools and research practices of the examination of characters as objects of copyright, which have become substantially expanded in the current analytical practice of North American experts in the field of forensic science.

Keywords: characters, intellectual property, North American practice.

Problem Formulation. Among the main directions of the development of scientific and methodological means of forensic examination of the United States of America, the study of the characters of literary works and other works of art as independent, separated from the works of the original sources of copyright objects is one of the most productive, and deserves attention of domestic experts in copyright and forensic experts. In the field of art criticism, the image of the actor of the work (graphic, audiovisual, literary), represented by certain means of artistic expression (verbal, graphic, audiovisual), which forms this image, is its general appearance and characteristic behavior. Regardless of the material form of the work, the person is recognized not only by a person, but also by any living or conditionally alive person (animal, plant, fantastic being). In Art. 9 of the Law of Ukraine *On Copyright and Related Rights* states that a part of a work that can be used is considered by itself as a work. Consequently, the character as a part of visual and audiovisual (as well

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as literary) works belongs to the number of objects of intellectual property and is subject to legal protection. The task of a forensic expert is to empirically determine the level of independence of characters based on objective evaluation criteria, which are not represented in the appropriate official methodology.

Analysis of recent research and publications. Thanks to the efforts of leading experts in forensic expertise in the field of protecting characters as objects of intellectual property (among them there are the names of Prof. Zara K. Said, Ken Abraham, Kerry Abrams, John Bovers, Charles Barzun, Kevin Collins, Anna Kolin and others., as well as specialists working in research institutes of the New England Intellectual Property Scholars, the University of Washington School of Law, the Washington University of St. Louis School of Law, the Michigan State University College of Law, the University of Miami School of Law — the leading centers that deal directly with the methodology of the study of characters) at Over the last few decades in the United States, several professional techniques have been established and tested at the same time, which are actively applied in judicial practice. An overview of the two most commonly used methodologies that are used most often is given in this article. Thus, the **purpose and tasks** of the article are a generalized outline and a critical analysis of the basic scientific and methodological concepts of North American forensic experts, which are used in the process of investigating the facts of the use of characters as objects of copyright.

Main Research Content Presentation. It should be noted that the study of original characters as independent objects of copyright (which implies the possibility of their independent existence and use outside the scope of the works in which they were presented for the first time) as a separate direction forensic expertise of North American professionals (which involves the use of special scientific -methodic means) dates back to the first half of the 1930s, when the presiding judge Lerned Hand sentenced the first conviction for the illegal use of characters in the case of Nichols v. Universal Pictures Corps »[1]. As stated in the decision: "To our knowledge, the unlawful use of characters outside the plots of the works for which they were first introduced has never been considered before a court". Since then and until now, United States legislation has not yet received separate laws (or their parts or separate sections), which specifically mention the peculiarities of handling cases for the protection of characters as objects of copyright. The so-called "The Copyright Act", of 1976, as the basic legal document most often appealing in such cases, does not generally include references to "characters", as a separate category, although there is a long list of copyright objects (from purely textual to graphic and audiovisual, dramatic, scientific, journalistic works, etc.) that

[1] Nichols v. Universal Pictures Corp. — 45 F. 2d P. 119 (2d Cir. 1930).

are protected by law. However, until the completion of the case, "Nichols v. Universal Pictures Corps, "the United States judge considered the characters only as an integral part of the works they presented for the first time.

For example, the most famous work of North American red writing in the first half of the nineteenth century was Hermann Melville's novel White Whale (1851) — he could only get proper legal protection on the whole. Although during the last century a significant number of imitations, updated versions, or so-called "sequels" (continuation) of this glorified literary text in which various characters from the original source are present, the author (if he was still alive) could apply to the court for the purpose protect their rights to the characters he created. However, by the beginning of the 1930s, the actors of his novel (which were considered exclusively as an integral component of the work-source) would have been analyzed by experts of forensic examination with the help of the traditional "test" (a set of scientific and methodological means of analysis), known as "test for substantial similarity" (Substantial Similarity Test) of literary works.

If the unscrupulous creators of the updated versions of the novel used only certain names and descriptions of characters, rather than individual fragments of the text (they should have been longer than fragmentary quotes), the author of the source and his representatives should convincingly prove that these objects are the very essence of "White China" Its most important semantic center, or the central formal elements that most fully express the original qualities of the product in order to formulate the conclusion that there is a noticeable", substantial similarity "(as the main criterion for estimating the potential This violation).

The judgment in Nichols V. Universal Pictures Corps "has actually created a legal precedent that allowed the protection of characters as separate objects of copyright. Since then, all actors, or "heroes", of various works (these concepts are synonymous with the term "character") finally received adequate protection. At the same time, the list of characters subject to legal protection was still limited. It did not include the so-called "underdeveloped characters". This criterion for assessing "underdevelopment", assumed that each original character (presented in a text or graphic form or as part of an audiovisual work) had its own verbal portrait or the original form of visual representation and / or specific (characteristic, "distinctive") behavior, specific vocabulary, etc. In the presence of these characters, the character was to be considered "sufficiently developed", and complied with the requirements for the provision of legal protection. The court decision said that "the less developed the character, the less legal protection he can get"[1]. It should be noted separately that any plot features (in literary and cinematographic works) were practically not taken into account.

[1] Nichols v. Universal Pictures Corp. — 45 F. 2d at P. 121 (2d Cir. 1930).

Based on expert opinions, judge L. Hand determined that (for the purpose of adequate legal qualification as independent objects of copyright) characters would have to attest such a specific quality as "sufficient level of creativity" (each character was capable of accepting a sufficient level of originality and certifying, that its creation required considerable creative efforts). Secondary characters, actors of the secondary plan, deprived of expressive personality traits, were considered "sufficiently developed" (in the creative aspect) for conclusions about the possibility of their legal protection outside the work of the source. For example, in literary works, there are quite a number of characters who do not have a clear and detailed verbal portrait; their replicas are reduced to a few individual words, and their role in the plot is minimal. Such characters are easy to identify in works of all forms of art — from children's comics and promotional posters to radio shows and cinematic tapes.

Thanks to the resonant judgment of Judge L. Hand, in the early 1940s, the "The distinctive delineation test", was included in the arsenal of expert research on the protection of intellectual property in the United States. In our time, such methodical tools are used by professionals of forensic expertise in many English-speaking countries of the world. Their effectiveness is confirmed by many years of practice.

At the same time, the "test for sufficient level of creativity", has obvious disadvantages that arise, first of all, due to the lack of knowledge of specialists with the specific features of the emergence of characters in creative practice. The history of culture is known for a considerable number of so-called "traveling", or "eternal", images — characters such as the fictional hero lover Don Juan, or the Vampire Count Dracula, who have repeatedly appeared in heterogeneous works (books, paintings, films, etc.) by many authors. all over the world. We should not forget about the existence of well-known historians of the "typing", of established characters (for example, the character of "a brave warrior", "an insidious criminal", "an old sage", "seductive beauties", "rich schnapps", etc.), on the basis of signs which was created by the lion's share of characters in contemporary culture and art.

In a sense, the "second life", in the field of expert examination of characters as objects of copyright received an outdated method of determining "substantial similarity", which has undergone significant transformations precisely because of the awareness of the inevitable problems of the analysis of this similarity of characters. Its origins are found in the long-term case of the late 1940s to protect the literary character of Sem Spade from a series of popular works, T*he Maltese Falcon*. In the final judgment of the court it was said that "a character cannot be considered as complying with the requirements of legal protection, if this character does not embody the essential plot features, or essential features of the work"[1]. In other words, in the process of material analysis, the experts had to

[1] Kaplan B. An Unhurried View of Copyright. New York, 1967. P. 25.

determine whether the work-source suffered irreparable qualitative loss, if it removed from its plot and / or figurative structure a certain character, which should be recognized as complying with the conditions of legal protection. Characters of this genre are the leading means of artistic expression, through which the author communicates to the readers or viewers the form and the internal content of his creation. Consequently, in their absence, the work definitely loses originality.

However, "if it is proved that a certain character is nothing more than an ordinary pawn in a large game of the development of the plot of a work, it does not meet the requirements of legal protection", [1]. From that time, expert opinions of the North American experts firmly established two concepts — "ordinary character", and "test characters that embody the essential features of the work." We can cite a lot of examples of secondary, "ordinary characters", which serve as a kind of "mass", in the works of literature, fine arts, cinematography. Their absence is not able to significantly affect the essential artistic and / or meaningful features of the work, while the artificial "removal", of the central actors, the main characters — endowed with vivid features of individuality, capable of expressing the very essence of the work of the source, will definitely lead to the collapse of its structure.

It is hard to imagine the famous Shakespeare drama "Hamlet", and "Macbeth", in the absence of their title characters. It is also impossible to assume the existence of the popular children's cartoon "Masha and the Bear", in our time in the absence of the little daring heroine of this tape. However, it is unlikely that this audiovisual work will lose its internal artistic integrity and originality in the absence of one of the characters of the second plan (numerous squirrels, hedgehogs and bunnies). Similar characters are quite "ordinary", because they do not embody the essential features of the work, and, from the point of view of the North American court proceedings, do not belong to the protected objects of copyright. Thus, the main task of the experts is to examine the case materials and reasonably prove whether a particular character in respect of which a lawsuit has arisen, to the number of "ordinary", or those that embody the essential features of the work.

Conclusions It should be emphasized that in the research practice of modern United States court experts of the beginning of the new millennium, both of these "tests", are actively used. The final results of the examination depend mainly on the positive answer to the question of whether the studied characters meet the requirements of only one of these "tests,", although the judges are often required to provide them with substantiated conclusions based on the use of both techniques.

On the one hand, such an analytical approach allows us to adequately and thoroughly explore all aspects of the case materials. However, as the leading

[1] Ibidem, p. 26.

North American theoreticians of forensic expertise have repeatedly emphasized, "the test for a sufficient level of creativity", and "test of characters embodying the essential features of a work", are rather mutually exclusive than those that can complement each other productively. According to Zar K. Said, when both trials are used simultaneously in the litigation, this creates unnecessary confusion. As a result, key questions about which characters can be protected often get radically excellent answers[1]. For example, in the famous series of children's cartoons *The Duck Tales* by Disney, we find several hundreds of diverse characters. Many of them have a rather individualized appearance, but, at the same time, they are quite obvious to belong to the "mass". Consequently, they are quite original, their creation required significant creative efforts; that is why they are subject to legal protection as independent objects of copyright. However, their artificial removal (in the process of analysis) from the plot structure of animated films (taken separately and in general) cannot significantly affect the artistic integrity. Similarly, the dozens of the main characters, *The Duck Tales*, are quite original and original, but they are not significant for the development of the storyline of the cartoon series in general. Moreover, even the leading protagonists, such as the wealthy old banker Scrooge McDuck (the typical character of the rich-schnapps), or his loyal servant-butler, or the duck-housekeeper who looks after the ducks-nephews of Scrooge, belong to the traditional types of characters that have repeatedly appeared in the works of literature and fine art during the last few centuries. Even a little daring girl Masha from the aforementioned cartoon has a well-known prototype in folk tales.

Thus, in the process of reviewing and critically assessing the methodological materials of North American court experts, time-tested and productive analytical practices can be identified and adapted. At the same time, their effective use by domestic professionals of forensic expertise requires an objective critical approach, appropriate testing, the use of a wider range of research and methodological approaches.

ПРОВІДНІ ПІВНІЧНОАМЕРИКАНСЬКІ МЕТОДИКИ ДОСЛІДЖЕННЯ ПЕРСОНАЖІВ ЯК ОБ'ЄКТІВ ІНТЕЛЕКТУАЛЬНОЇ ВЛАСНОСТІ (ЗА МАТЕРІАЛАМИ СУДОВИХ ЕКСПЕРТІВ США)

І. О. Струк, М. М. Калініченко

Оглядово представлено історію створення та специфічні особливості провідних науково-методичних засобів і дослідницьких практик експертизи персонажів як об'єктів авторського права, що набули істотного поширення в сучасній аналітичній практиці північноамериканських фахівців судово-експертної галузі.

Ключові слова: персонажі, інтелектуальна власність, північноамериканська практика.

[1] Zahr K. Said. Fixing Copyright in Charachters. New York, 2013. P. 786.

ВЕДУЩИЕ СЕВЕРОАМЕРИКАНСКИЕ МЕТОДИКИ ИССЛЕДОВАНИЯ ПЕРСОНАЖЕЙ КАК ОБЪЕКТОВ ИНТЕЛЛЕКТУАЛЬНОЙ СОБСТВЕННОСТИ (НА ОСНОВЕ МАТЕРИАЛОВ СУДЕБНИХ ЭКСПЕРТОВ США)

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Персонажи как составная часть изобразительных и аудиовизуальных (а также литературных) произведений относится к числу объектов интеллектуальной собственности и подлежит правовой охране. Задача судебного эксперта заключается в эмпирическом определении уровня самостоятельности персонажей по объективным оценочным критериям, которые пока не представлены в соответствующей официальной методике. В предлагаемой статье обзорно представлены история создания и специфические особенности ведущих научно-методических средств и исследовательских практик экспертизы персонажей как объектов авторского права, которые получили существенное распространение в современной аналитической практике североамериканских специалистов судебно-экспертной отрасли. Благодаря усилиям ведущих специалистов североамериканской судебной экспертизы в сфере защиты персонажей как объектов интеллектуальной собственности в течение нескольких последних десятилетий были созданы и апробированы сразу несколько профессиональных методик, которые активно применяются в судебной практике. Обзорный анализ двух основных методических средств, которые применяются чаще всего, представлены в данной статье, целью и задачей которой является обобщенное определение и критический анализ основных научно-методических концептов североамериканских судебных экспертов, которые применяются в процессе исследования фактов использования персонажей как объектов авторского права. Рассмотрены основные научно методические «тесты» какими пользуются эксперты Соединенных Штатов («тест на достаточный уровень творческого выразительности» и «тест персонажей, воплощающих сущностные признаки произведения»). В процессе обзорного исследования рассмотренных методических материалов были выделены продуктивные аналитические средства, которые стоят того, чтобы войти в арсенал современной украинской судебной экспертизы. Однако, их эффективное практическое применение отечественными экспертами требует тщательного критического отношения, соответствующей апробации, применения широкого спектра исследовательских и методических подходов.

Ключевые слова: персонажи, интеллектуальная собственность, североамериканская практика.

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CLASSIFICATION OF SUBJECTS AS OBJECTS OF COPYRIGHT (EXPERIENCE OF NORTHERN AMERICAN JUDICIAL EXPERTS)

A review of key aspects of scientific and methodological means for the

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classification of heterogeneous characters in literature and other forms of art as objects of copyright, which are used in the current analytical practice of North American experts in the field of forensic science.

Keywords: copyright, bulk characters, ordinary characters.

Problem Formulation. More often domestic court experts have to study the works of various forms of art (literary, graphic) and audiovisual works as intellectual property objects, as well as to analyze the characters in their artistic structure. The court experts appeal in the event of a dispute arising out of the unlawful processing of the original work or the use of its specific components, among which characters are, of course, engaged in one of the central positions. United States court experts over the last few decades (since the 1930s when North American courts reviewed the first cases of protecting characters as independent objects of copyright, separate from source work) have gained significant practical experience that should become a valuable source. information for Ukrainian experts in the field of forensic examination of intellectual property objects. In this sense, the scientific methodical system of character classification is the first stage of the study on how to identify the unauthorized use of characters as objects of copyright.

Analysis of recent research and publications. As evidenced by extensive jurisprudence in the specialized professional editions of the United States, for the resolution of disputes regarding the characters as objects of the author, regular experts from the forensic expertise who have the relevant specialist knowledge and can provide the important information necessary for an objective and impartial review of the case are regularly involved. Their research is based on a comprehensive system of character classification, developed by leading theorists of culture and art of the last century, and which was finally finalized in the intelligence and methodological guidance of such theorists of the forensic examination of the USA as prof. Zar K. Said, Ken Abraham, John Beveres, Kevin Collins and others, as well as *Law School Specialists at the University of Virginia*.

The urgency and scientific and methodological value of the results of their activities predetermined the purpose and objectives of this article, namely, a generalized outline of the main scientific and methodological concepts of North American forensic experts, which are actively used in our time in the process of classifying characters as objects of copyright in order to further study the facts of their possible unauthorized use. This problem is important for Ukrainian court experts, who increasingly have to investigate the materials of court cases on the misuse of characters.

Main Research Content Presentation. The history of art studies convincingly testifies that, regardless of artistic means (various stylistic techniques) and forms of material expression (printed literary text, fixed picture, dynamic integrity of motion pictures, etc.), characters (as a group of

objects subject to rational classification), and the author's technique of their representations evolved to the greatest extent among all the other components of art throughout the entire history of the existence of human culture. Inventive authors tirelessly find and implement innovative creative means that can enrich the original visual or verbal portrait of the characters, as well as demonstrate the richness of their inner world, contradictory thoughts and views, unique features of behavior and vocabulary, and so on. Thanks to the skillful image (verbal and different forms of visual representation), the characters readers and viewers are able to penetrate deeply into the dramatic collisions of the consciousness of skillfully created characters, to get acquainted with the unique personalities of each of them. But how important is all this for forensic experts who are exploring characters as copyright objects?

As many years of North American expertise show, adequate research of characters as objects of intellectual property requires a proper, scientifically sound classification, since it is impossible to investigate the structure of a particular object without understanding its essential features, which are identified and diagnosed through the understanding of the belonging of this object to a certain group.

In the spheres of various forms of contemporary art studies (in their historical, and, especially, the theoretical branches) there is a real chaos of scientific ideas and research methods. Recognizing the clear-cut counter-productivity of deepening the expertise of the forensic experts into the essence of each of today's variants of the classification of characters (it refers to such areas as the theory of “reader response”, and receptive aesthetics, hermeneutics, cognitive psychology, and many, many others), prof. Zar K. Said — one of the leading theorists of forensic examination of intellectual property in the United States — in the exploration of “Fixing Copyright in Characters” (2003) proposed to use (based on the research of the famous literary theorist E. M. Forster) the complex method of character classification as objects of copyright, dividing all objects of research into two main categories: the so-called “ordinary” (or “stock”, “flat”) characters and “voluminous”, characters.

Note that in this case we are talking about actors of any works (not only literary, but also graphic, stage, audiovisual works, etc.). Actually, this particular type of classification, somewhat modified (differences mainly consist of the use of synonymous concepts and terms), is widely used in modern research practice of North American professional forensic expertise.

According to E. M. Forster, “ordinary”, characters can usually be described in one single sentence, since they are based on a single idea, or a limited set of leading visual signs: when they reveal something more, we get

a bulk character[1]. In other words, this kind of characters is easy to characterize, because such actors remain relatively unchanged, independent of the circumstances of the plot (literary, cinematographic and cartoon works) and forms of material expression (paintings, sculptures, etc.) as if they were permanently frozen in time. A typical example of an "ordinary", character is the hero of American comic books, popular adventure works and movies and cartoons "Superman": his appearance, manner of behavior, specific vocabulary and other essential features remain virtually unchanged over the past few decades. The only and unchangeable remains and embodied in the material form is the main "idea", of this character — a person endowed with superhuman "super", abilities, which saves the world from terrible global dangers.

Another striking example of such characters is the fictional detective Sherlock Holmes, authored by Arthur Conan Doyle. Unlike Superman, the approximate age of Holmes, his style, character, peculiarities of clothing, habits and other features in numerous literary and cinematographic works have been repeatedly modified. However, the character of the most famous British detective still remains "ordinary", because it is based on the fundamental idea of "investigation using the deductive method."

"Ordinary", characters also appear regularly in animated films — from the daring girl Masha from the popular Masha and the Bear series to pets for children around the world — Mickey Mouse and Donald Duck from Disney cartoons. Of course, their appearance may be noticeably different due to other hairstyles and varied elements of dress, but the overall outline and the ideological basis of each of these characters remain permanently fixed.

In contrast to the first variety, "voluminous", characters are multidimensional and contradictory, a description of their specific attributes (from the nature and manner of behavior to the specific manner of conversation) will always seem incomplete, since they are capable of surprisingly unexpected evolutionary transformations[2]. When it comes to characters in graphic and / or audiovisual works, the appearance of "bulk", characters is also surprisingly dynamic and changing. An example of "bulky", characters, which in general is impossible to associate with the characters "ordinary", is the main character and title character of the tragedy "Hamlet". As the results of Shakespeare's historical studies show, the appearance, character, manner of behavior, clothes and other attributes of the prince changed in the most radical way — from the respectable, low-lying and smooth, forty-year-old man to a high and slender fussy young man.

One should pay special attention to the fact that a certain category of characters consists of so-called "wandering", or "eternal", images that exist

[1] Forster E. M. Aspects of the Novel. New York: Harpers, 1955. P. 68.

[2] Margolin U. Characterization in Narrative: Some Theoretical Prolegomena, 67 NEOPHILOLOGUS 1, 1983. P. 2.

in the world culture for centuries, endowed with certain unchanging attributes, but are subject to radical content transformations. Due to this feature, they should be classified as "bulky".

According to the findings of the North American experts, "ordinary", characters, regardless of the form of material expression, are related and the most typical kind of actors of modern popular culture. Depending on the level of popularity, they have a significant economic potential. As a result, their unauthorized use by reproducing and / or processing by unscrupulous producers and entrepreneurs (leading to copyright infringement) is most common. Interestingly, from a purely historical perspective, "ordinary", characters as carriers embodied in the material form of a single idea (leading quality, main characteristics, etc.), occupied a lion's share of the actors of all works of culture[1]. At the same time, "voluminous", characters, as a rule, are present in complex and multidimensional classical works and the most modern examples of avant-garde "high school", art. As United States jurisprudence shows, litigation over the misuse of "voluminous", characters almost always requires lengthy complex and / or commissioned expertise, since scientifically based identification and an adequate assessment of a certain set of features (which allow experts to make effective use of commonly accepted areas North American methodological means of analysis — "test for sufficient level of creativity", and "test of characters embodying the essential features of a work") in the diynyl cases require considerable effort and considerable professional experience.

Conclusions The need for a proper classification of characters in the context of expertise in the field of intellectual property protection is directly determined by their increasing role (and hence commercial value) in contemporary culture. According to United States[2] court statistics, the number of claims for the protection of copyright in various works of art in this country is increasingly reduced to the protection of rights by the characters who are considered as independent, independent objects. Popular heroes of films, cartoons and comic strips receiving multi-million-dollar cash collections are no less successful in designing a variety of commercial goods and advertising services — in fact, they are turning into well-known trademarks that bring generators and licensees huge profits. Consequently, character classification is a unique starting point for all subsequent research and analytical comparisons that North American court experts have to conduct in the process of reviewing cases of illegal use of intellectual property. Further study of the long-term experience of North American colleagues will contribute to the approval of new research methods and the overall optimization of forensic examination in the field of copyright protection. Given that the Ukrainian

[1] Chatman S. Story and Discourse: Narrative Structure in Fiction and Film. New York : Harpers, 1978. P. 109.

[2] Zahr K. Said. Fixing Copyright in Characters. New York, 2013. P. 791.

experts currently lack the official methodology that defines commonly accepted principles and standards for investigating the characters of intellectual property, the scientific and methodological guidelines of foreign analysts can become a useful source of up-to-date information on the most effective practices of modern world-class judicial expertise.

КЛАСИФІКАЦІЯ ПЕРСОНАЖІВ ЯК ОБ'ЄКТІВ АВТОРСЬКОГО ПРАВА (досвід північноамериканських судових експертів)

М. М. Калініченко, І. О. Струк, Ю. С. Харабуга

Оглядово представлено ключові аспекти науково-методичних засобів класифікації гетерогенних персонажів літератури та інших форм мистецтва як об'єктів авторського права, що застосовуються в сучасній аналітичній практиці північноамериканських фахівців судово-експертної галузі.

Ключові слова: авторське право, об'ємні персонажі, ординарні персонажі.

КЛАССИФИКАЦИЯ ПЕРСОНАЖЕЙ КАК ОБЪЕКТОВ АВТОРСКОГО ПРАВА (ОПЫТ СЕВЕРОАМЕРИКАНСКИХ СУДЕБНЫХ ЭКСПЕРТОВ)

М. М. Калиниченко, И. А. Струк, Ю. С. Харабуга

Осуществлено обобщенное определение основных научно-методических концептов североамериканских судебных экспертов, которые активно применяются в наше время в процессе классификации персонажей как объектов авторского права в целях дальнейшего исследования фактов их возможного несанкционированного использования. Эта проблематика является важной для украинских судебных экспертов, которым все чаще приходится исследовать материалы судебных дел относительно неправомерного использования персонажей. Ведущие теоретики судебной экспертизы объектов интеллектуальной собственности в Соединенных Штатах Америки пользуются комплексной методикой классификации персонажей как объектов авторского права, распределив все объекты исследования на две основные категории: так называемые «ординарные» (или «стоковые», «плоские») персонажи и «объемные» персонажи. Эта классификация персонажей является своеобразным отправным пунктом всех последующих исследований и аналитических сравнений, которые приходится проводить североамериканским судебным экспертам в процессе рассмотрения материалов дел о незаконном использовании объектов интеллектуальной собственности. Необходимость надлежащей классификации персонажей в контексте проведения экспертиз в сфере защиты интеллектуальной собственности непосредственно обусловлено их растущей ролью (а следовательно и коммерческой ценностью) в современной культуре. Как свидетельствует статистика судебных решений, количество исков по защите авторских прав на различные произведения искусства все чаще сводится к защите прав именно на персонажи, которые рассматриваются как самостоятельные, независимые объекты. Учитывая то, что украинским специалистам пока не хватает официальной методики, которая определит общепринятые принципы и стандарты исследования персонажей объектов интеллектуальной собственности, научно-методические указания зарубежных аналитиков могут стать полезным источником актуальной информации о самых эффективных практиках современной судебной экспертизы мирового уровня.

Ключевые слова: авторское право, объемные персонажи, ординарные персонажи.

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FORENSIC SCIENTIST COMPETENCE WHILE FORENSIC EXAMINATION OF TRADE MARKS IN THE WHILE INVESTIGATION INTO THEIR ILLEGAL USE

Limits of the procedural and scientific competence of a forensic scientist during forensic examination of intellectual property objects during an investigation into the illegal use of a trademark are outlined. An ambiguous forensic scientist task for determining similarity to the degree of mixing of the identified design with the image of the trademark has been analyzed. Issues and the scope of the forensic scientist task for determination of lost profit because of trademark infringement have been clarified.

Keywords: illegal use of trademark (mark for goods and services); forensic scientist competence; forensic examination of intellectual property objects; economic research in the field of intellectual property; lost profits.

While investigation of the illegal use of trademarks (hereinafter, TM) for determining socially dangerous consequences of special knowledge use in their highest form that means Forensic Science is obligatory. Equally important is the study of the identified designation on a potentially counterfeit product with a trademark image, since such researches allow the forensic scientist to identify individual elements of a crime. These issues are included in forensic scientist tasks of the V class: forensic examination of intellectual property objects (hereinafter FEIPO). This examination is the Ukrainian invention, since no other country has a similar analogue[1]. Normally, FEIPO exists in Ukraine since January 2002, when it was introduced to the List of main types of forensic examinations and expert specialties by the Ministry of Justice of Ukraine.

This direction exclusiveness is presented through the lack of links to forensic scientific researches. As an example, we present a fundamental work of A. V. Ishchenko, where the results of more than 1,000 theses for almost

[1] Kysyl N. V. (2017) *Rol' sudebnoj jekspertizy v processe dokazyvanija narushenij prav intellektual'noj sobstvennosti: v kontekste sudebnoj reformy. Kriminalistika i sudova ekspertiza* [Forensic science role while proving violations of intellectual property rights: in the context of judicial reform. Criminalistics and forensic science]. Issue 62. P. 424 [in Russian].

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60–year period (from 1938 to 2000) are summarized, describes formation, current state and priority directions of scientific researches on issues of forensic examination, however FEIPO are not mentioned. Considering the thematic focus of dissertation researches on the methodology issues of investigation of certain types of crimes, A. V. Ishchenko merely states that "it is equally important to determine the forensic possibilities of protecting the rights of the author or the inventor ..."[1].

Unique scientific effort of dissertation level considering problem issues of FEIPO is the research paper of G. K. Avdeia *Problems of forensic examination of counterfeit audiovisual production*[2]. Great influence on the development of this direction was made by H. V. Prohorov-Lukin, first Chairman of FEIPO Department of the Ministry of Justice of Ukraine of Ukraine and the First Head of FEIPO of Kyiv RIFE. Issues of FEIPO considered scholars and other experts in FEIPO including: P. P. Krainiev, O. F. Doroshenko, O. B. Butnik-Siverskyi, N. V. Kisil, I. V. Starodubov and others. At the same time, many issues of the general theoretical FEIPO nature including competence of forensic scientist while trademark forensic examination were not highlighted.

The purpose of the article is to consider the competence of scientists in specialties 13.6. Researches related to commercial (brand) names, trademarks (trademarks and service marks), geographic indications and 13.9 Economic research in the field of intellectual property while forensic examinations during the investigation into illegal use of trademarks.

N. I. Klymenko believes that issue of a forensic scientist competence "is one of the central issues in the theory and practice of forensic science"[3]. The legislator defines the rights, duties and powers of a forensic scientist, thus defining the legal aspect of his competence. *M. H. Shcherbakovskyi and L. P. Shcherbakovska. call this competence a procedural one*[4]. However, forensic scientist competence is a complex of his "special knowledge in the field of theory, methodology and practice of a certain kind, kind of examination"[5].

In the second section of the Instruction on the appointment and performing forensic examinations and forensic researches of the Ministry of Justice of

[1] Ishchenko A. V. (2003) *Metodologichni problemi kriminalistichnih naukovih doslidzhen': monografija/za redakcicju I. P. Krasjuka* [Methodological issues of forensic researches: monograph/edited by P. Karassuk]. Kyiv : National Academy of Internal Affairs, p. 265 [in Ukrainian].

[2] Avdieieva H. K. (2006) *Problemi sudovo-ekspertnogo doslidzhennja kontrafaktnoji audiovizual'noc produkcii: dis. kand. jurid. nauk* [Issues of forensic examination of counterfeit audiovisual production : Candidate of science dissertation]: 12.00.09. Kharkiv, 235 p. [in Ukrainian].

[3] Klymenko N. I. (2018) *Zahalna teoriia sudovoi ekspertolohii: monohrafiia* [General theory of Forensic Expertology : monograph]. Ternopil: Krok, p. 14. [in Ukrainian].

[4] *Sherbakovskyi M. H. Shcherbakovska L. P. (2013) Kompetencija i kompetentnost' sudebnogo jeksperta. Kriminalistika i sudebnaja jekspertiza* [Competence and skills of a forensic expert. Forensic science and criminalistics]. Issue 58. P. 97 [in Russian].

[5] Klymenko N. I. Papers mentioned above, p. 15.

Ukraine (hereinafter, the Instruction) contains a number of norms regulating actions of a forensic scientist if the question goes beyond his special knowledge[1]. Thus, according to the 2.3 clause of the Instruction, a forensic scientist is not allowed to resolve issues beyond his special knowledge, therefore, on the basis of the 2.2 clause; he is obliged to inform the appointment subject of forensic examinations about possibility of performing a forensic examination and according to the 2.1clause, a forensic scientist has the right to draw up a Notice of refusal to perform an examination on this basis. Besides the prohibition to go beyond the scope of his scientific competence, a forensic scientist is prohibited to investigate the law and evaluate the legality of the procedures, regulated by laws and regulations (Clause 2.3 of the Instruction).

Standards of the 1 part of Art. 242 of CPC of Ukraine do not allow performing forensic examination while criminal proceedings to clarify legal issues that means the forensic scientist competence does not include issues that require a solution based on legal knowledge[2]. If this is true, then it must be recognized that FEIPO forensic scientists and forensic economists while performing examinations, systematically go beyond their scientific competence. Regardless of presence or absence of an approved certified forensic technique, the legislation of Ukraine regulating economic relations is the basis for any forensic scientist task stated in the manual on the basis of forensic science regarding methodological provisions of the forensic economics[3]. If FEIPO experts are forbidden to refer to the substantive law that creates a "body", for objects of intellectual property, because on this basis they receive legal protection, no expert conclusion will be drawn up.

"Expert practice demonstrates while performing forensic examinations, a person having knowledge in the field of physics ..., uses criminalistics knowledge, forensic science theory, proof theory, etc. This is primarily due to the fact that it is impossible to perform the correct forensic evaluation of results of any research without taking into account provisions of forensic identification theory, diagnosis, situational analysis, mechanism of tracing, causative relationships, etc.", affirms E. B. Simakova-Efremian[4].

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[1] *Pro zatverdzhennia Instruktsii pro pryznachennia ta provedennia sudovykh ekspertyz ta ekspertnykh doslidzhen ta Naukovo-metodychnykh rekomendatsii z pytan pidhotovky ta pryznachennia sudovykh ekspertyz ta ekspertnykh doslidzhen: nakaz Ministerstva yustytsii Ukrainy*[On approval of the Instruction on the appointment and conducting of forensic examinations and expert studies and scientific and methodological recommendations on the preparation and appointment of forensic examinations and expert studies. Order of the Ministry of Ministry of Justice of Ukraine], dated on: 08.10.1998 № 53/5. URL: http://zakon5.rada.gov.ua/laws/show/z0705–98.

[2] Sherbakovskyi M. H. Shcherbakovska L. P. Papers mentioned above, p. 97.

[2] *Osnovy sudovoi ekspertyzy: navch. posib. dlia fakh., yaki maiut namir otrym. abo pidtv. kvalif. sud. eksp./avt.-uklad.: L. M. Holovchenko, A. I. Lozovyi, E. B. Simakova-Iefremian ta in.* (2016) [The Essentials of Forensic Science: Tutorial for experts who are going to get or confirm forensic scientist level of proficiency: L. M. Holovachenko A. I. Lozovyi E. B. Simakova-Yefremyan and others]. Kharkiv : Pravo, p. 219 [in Ukrainian].

[4] Simakova-Yefremian E. B. (2016) *Intehratsiini protsesy v sudovii ekspertyzi: sutnist ta problemni pytannia kompleksnykh doslidzhen. Teoriia ta praktyka sudovoi ekspertyzy i kryminalistyky*

In our opinion forbidding forensic scientists to clarify legal issues the legislator does not force forensic scientists to stop studying and applying the rules of procedural and substantive law for solving forensic scientist tasks. In this way, he tries to avoid the existing problem of transferring responsibility to subjects who, according to their purpose should clarify interpret and apply the legal issue, however, they try to avoid this or deliberately put to the forensic scientist decision a legal issue to take such evidence for the basis of their decision. The principle Jura novit curia means "the court knows the law", so all issues clarifying law are their prerogative, and not forensic scientist prerogative. The investigator is a professional lawyer, the central figure authorized by the legislator to carry out a pre-trial investigation of criminal offenses within the limits of his competence, therefore, he only has the right to perform the deeds qualification of acts and determine the corpus delicti.

In legal circles of domestic and international lawyers it was decided to distinguish between the so-called "right", and "fact", issues. These issues are forensic scientists' prerogative and are solved through the use of special knowledge in the opinion of many lawyers. In the forensic economics and FEIPO the boundaries of the "rights", or "fact", issues are arbitrary; it is very difficult to determine objective criteria reflecting such division. In some cases, determining of a particular "fact", is a legal interpretation of the law, so forensic scientists have no right to establish such facts.

For example, in matters of tax evasion it is important to establish whether there was a real purchase of goods or there are only documents that it seems to confirm. Establishing this fact goes beyond the scientific competence of a forensic economist, because it is carried out by a court, "that evaluates and compares all evidence, including the conclusion of a forensic scientist which takes into account original documents of the failed economic transaction with other evidence that it is impossible actual implementation"[1]. Therefore, "forensic economist investigates objects that is information medium about the fact from which only information about a business operation can be singled out, that means data and not the fact of its realization"[2].

Forensic scientists in specialty 13.6 find themselves in a similar situation, since during the investigation of illegal use of TM they are forbidden to establish the fact of "illegal use", or "use", of TM. In our opinion, competence limits of forensic scientists in specialty 13.6 in criminal proceedings against a Trademark infringement is the establishment of the following facts:

— the full or partial identity of the TM image to the detected symbol on (object display name);

— uniformity (homogeneity) of goods and/or services.

[Integration processes in forensic science: the essence and problem issues of complex researches. Theory and Practice of Forensic Science and Criminalistics]. Issue 16. P. 179–180.

[1] The Essentials of Forensic Science: p. 204.

[2] Ibidem.

The similarity determination to the confusion degree of TM image with the identified designation goes beyond the scientific competence of forensic scientists in specialty 13.6 and cannot be established. The undeniable proof of the claim is the resolution of Supreme Court of Ukraine dated on 02/22/2018 regarding case № 922/3136/16[1], where the court, in case of forensic scientist decision on specialty 13.6, who established the similarity to the degree of mixing of the two TM came to the conclusion that these TMs are not similar pointing out: "unique reason for the forensic examination appointment is the need of special knowledge application, whereas in this case the need of special knowledge use is not available, since the resolution of the raised issue (as regards similarity of the registered trademark and controversial designation) falls within the competence of ordinary consumer of relevant services".

In particular, the concept of "similarity of the designation to such extent that it can be confused", does not correspond to the terminology of forensic identification theory. It is legal and used by the legislator not only to interpret the violation of TM owner rights but also to establish the inconsistency between the registered mark and conditions for the provision of legal protection (part 2 of Art. 20 (part 1 of Art. 19, part 3 of Art. Issued under the Law of Ukraine *On Protection of Mark for Goods and Services*)[2].

As V. V. Biryukov noted, "the object under test is not analogous, not similar, but by the way that it has manifested itself in the past and is involved in the investigating case"[3]. Therefore, H. V. Prokhorov-Lukin was right, in the opinion regarding the issue of TM similarity to the degree of mixing is the issue of "false identification by the consumer of a concrete, individually determined commercial source of goods (services)"[4]. The wording of this forensic scientist task should be revised from the point of view of adherence to the prohibition of decision by forensic scientists of legal issues, because here is a way beyond the limits of the forensic scientist procedural competence on specialty 13.6.

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[1] *Postanova Verkhovnoho Sudu Ukrainy vid 20.02.2018 v spravi № 922/3136/16. Yedynyi derzhavnyi reiestr sudovykh rishen Ukrainy* [Resolution of the Supreme Court of Ukraine of dated on: 02.20.2018 regarding the case № 922/3136/16. Unified State Register of Court Decisions of Ukraine]. URL: http://reyestr.court.gov.ua/Review/72449740 [in Ukrainian].

[2] *Pro okhoronu prav na znaky dlia tovariv i posluh : Zakon Ukrainy* [On Protection of Rights to Trademarks for Goods and Services : Law of Ukraine] dated on: 15.12.1993 № 3689–XII. URL: http://zakon0.rada.gov.ua/laws/show/3689–12 [in Ukrainian].

[3] Biriukov V. V. (2014) *Kryminalistychna identyfikatsiia: metod, metodyky, tekhnolohii. Krymynalystyka y sudebnaia ekspertyza* [Forensic identification: method, methodology, technology. Forensic science and criminalistics]. Issue 59. P. 15 [in Ukrainian].

[3] *Metodyka sudovo-ekspertnoho doslidzhennia znakiv dlia tovariv i posluh (torhovelnykh marok): zvit pro NDR (zakl.)/H. V. Prokhorov-Lukin [ta in.]; MIuU, KNDISE, NDTsSEIV, NDIIV APrNU* (2009) [Methods of forensic researche on trademark for goods and services (Trademarks): report on R&D (concl.). Prokhorov-Lukin [and others]; Minijust Of Ukraine, Kyiv Rife, Intellectual Property Research Center, National Academy of Legal Sciences Of Ukraine] № ДР 0108U005823. Kyiv, p. 203 [in Ukrainian].

Currently, the questions are following: “Is the designation (name) marked on (indicate where) or applied in (indicate where), identical or similar so much that it can be confused with the registered mark for goods and services according to a certificate of Ukraine (number)?”, that contained in the scientific and methodological recommendations on preparation and appointment of forensic examinations and researches violates the resolution prohibition of legal issues by forensic scientists[1]. So, answering this question a forensic scientist on specialty 13.6 goes beyond not only limits of procedural but also scientific competence, because it belongs to competence of psychologists.

The outlining of competence of the forensic scientist in specialty 13.9: Economic research in the field of intellectual property determining the size of lost benefit of TM owner as a result of its illegal use is no less difficult task than in case of a forensic scientist on specialty 13.6. It can be explained by the forensic and criminal-procedural criteria for classifying a forensic scientist's conclusion. According to the certainty degree from the point of view of epistemology, any forensic scientist conclusion regarding the definition of lost profit may be only probable. The statement is not only about a certain size, but also about the availability or unavailability of lost profit in *categorical* form is impossible, because it is related to events in the future and only facts in the past can be proved. This problem leads to the uncertainty of procedural competence limits of a forensic scientist on specialty 13.9, since it turns out that his conclusion establishes a mandatory feature of the crime objective side. In other words, in this case there is a coincidence of a forensic scientist task and a fact which in the legal sense can be defined only by a court. And the fact that cannot be defined in the objective reality by any subject, since it belongs to the events in the future.

Availability of a particularly determined amount of the lost benefit of the TM owner due to its illegal use allows an investigator to perform the qualification of actions of the suspect according to parts 1, 2 or 3 of the 229 article of the Criminal Code of Ukraine or to define a crime unavailability. The table demonstrates the limits of property damage for qualifying the actions of the accused for illegal use of TM according to Art. 229 of the Criminal Code of Ukraine in the equivalent of the national currency (hryvnia) and the US dollar as of 01.01.2018.

[1] *Pro zatverdzhennia Instruktsii pro pryznachennia ta provedennia sudovykh ekspertyz ta ekspertnykh doslidzhen ta Naukovo-metodychnykh rekomendatsii z pytan pidhotovky ta pryznachennia sudovykh ekspertyz ta ekspertnykh doslidzhen* [On approval of the Instruction on the appointment and conducting of forensic examinations and expert studies and scientific and methodological recommendations on the preparation and appointment of forensic examinations and expert studies].

Table

Limits of Property Damage

Part Articles	Amount of loss	Number of non-taxable minimum incomes	UAH Amount	USD Amount
1	Considerable	20 and more	from 17 620	from 628
2	Important	200 and more	from 176,200	from 6,278
3	Especially Important	1000 and more	from 881,000	from 31,389

Depending on the nature of relations between the consequence and its basis, forensic scientist conclusions are classified into conditional and unconditional. It is obvious that expert's conclusion regarding the of lost profit definition as a result of illegal TM use is *conditional* and depends on the possibility of ousting original goods with counterfeit goods. In other words, when the expert in specialty 13.9 determines lost profit size, he assumes that 10 units detected by investigation counterfeit goods sold became unique reason explaining why 10 units of the original product were not purchased.

Consequently, it is proved that all forensic scientist conclusions on the determination of lost benefit of TM owner due to its illegal use are probable or conditional. Therefore, the definition by an expert in specialty 13.9 in the categorical form of lost profit amount, without specifying conditions for replacement of the original counterfeit product sold goes beyond its procedural and scientific competence.

In the context of the above mentioned, it is necessary to draw additional attention to the fact that during the investigation into illegal TM use while formulating of forensic scientist question about lost profit definition, the widespread occurrence is the indication of the detected number of counterfeit products without distribution into manufactured, sold and stored units.

In this regard, not all experts in specialty 13.9, calculating lost profits, indicate an additional condition for those units of counterfeit products that have not been sold. This leads to an amount overestimation of lost profit and, consequently, incorrect qualification of actions and illegal court decisions.

As an example, we will present a criminal case #. 725/1466/14–k, where the court determinate:

1. The accused illicitly manufactured counterfeit bags by sewing on the CHANEL-labeled tags and that are identical to the international registration marks # R431873 dated on 10.08.1997 and # 731984 dated on 10.02.2000 without the consent of the TM owner — company CHANEL SARL.

2. During controlled purchasing the sale of counterfeit products was fixed and documented.

3. As a result of search and seizure counterfeit bags kept for sale were confiscated.

In this case, the court qualified the actions of the accused for storage of counterfeit products for the purpose of sale, as an unfinished attempt on a crime, since the criminal intent was not brought to an end because of illegal activity termination by law enforcement agencies[1].

In criminal case № 1-300/13 the court retrained the actions of the accused with the application of Part3 of 3 of Art. 15 of the Criminal Code (unfinished attempt) to the formula for the qualification of the bodies of pre-trial investigation according to Part 3 of 229 of the Criminal Code of Ukraine. The court stated in the verdict that cigarettes manufactured by accused were not sold, but only stored in the warehouse, that did not cause any harm to the substance, but only could have caused it in the case of the implementation of counterfeit tobacco products. The criminal intention of the person was not brought to an end for reasons beyond his control[2].

Similar circumstances and the logic of law enforcement in while illegal TM use, where the design of an unfinished crime for those units of contract products that was not actually sold, was followed in cases № 419/3085/2012[3], № 1109/8768/12[4], № 725/5024/13–к[5], № 725/3081/14–к[6] and № 726/2324/14–к[7].

It is significant that as a result of the analysis of 81 according to the verdict on illegal TM use, available in the Unified State Register of Court Decisions, it was defined more than 55 % of cases (47) qualification of actions of accused

[1] *Vyrok Kirovskoho raionnoho sudu m. Kirovohrada vid 02.10.2012 u spravi* [The sentence of Kirovsky District Court of the city of Kropyvnytskyi dated on 02.10.2012 regarding the № 725/1466/14 case. Unified State Register of Court Decisions of Ukraine]. URL: http://www.reyestr.court.gov.ua/Review/38572553 [in Ukrainian].

[2] *Pryhovor Lenynskoho raionnoho suda h. Luhanska* [The sentence of Leninsky District Court of the city of Luhansk] dated on 14.01.2013 regarding the № 1–300/13 case. Ibidem. URL: http://www.reyestr.court.gov.ua/ Review/28831447 [in Ukrainian].

[3] *Pryhovor Krasnohvardeiskoho raionnoho suda h. Dnepropetrovska* [The sentence of Krasnogvardeyskiy District Court of the city of Dnipro] dated on 17.05.2012 regarding the № 419/3085/12 case. Ibidem. URL: http://www.reyestr. court.gov.ua/Review/24048183 [in Ukrainian].

[4] *Vyrok Kirovskoho raionnoho sudu m. Kirovohrada* [The sentence of Kirovsky District Court of the city of the city of Kropyvnytskyi] dated on: 02.10.2012 regarding the № 1109/8768/12 case. Ibidem. URL: http://www.reyestr.court.gov.ua/Review/26264674 [in Ukrainian].

[5] *Vyrok Pershotravnevoho raionnoho sudu m. Chernivtsi* [The sentence of Pershotravnevyi District Court of the city of Kropyvnytskyi] dated on: 02.10.2012 regarding the № 725/5024/13 case. Ibidem. URL: http://www.reyestr. court.gov.ua/Review/35816510 [in Ukrainian].

[6] *Vyrok Pershotravnevoho raionnoho sudu m. Chernivtsi* [The sentence of Pershotravnevyi District Court of the city of Chernivtsi] on: 02.10.2012 regarding the № 725/3081/14 case. Ibidem. URL: http://www.reyestr. court.gov.ua/Review/40182157 [in Ukrainian].

[7] *Vyrok Sadhirskoho raionnoho sudu m. Chernivtsi* [The sentence of the Sadhirsky District Court of the city of Chernivtsi] dated on: 02.10.2012 regarding the № 726/2324/14 case. Unified State Register of Court Decisions of Ukraine URL: http://www.reyestr.court.gov.ua/Review/41525435 [in Ukrainian].

based on methods of preparing a crime (manufacturing and storage) without the use of structures of the previous criminal activity that is undoubtedly a violation of the law. In these cases, forensic scientist in specialty 13.9 determined the lost profit in a categorical form without specifying the conditions for replacement of the original goods with counterfeit goods sold. Besides, while calculating property damage in the form of lost profit, they did not distribute units of counterfeit goods sold (those that could hypothetically replace original products) and only manufactured (stored) and went beyond the scope of both procedural and scientific competence.

As a result of research, it was found that the limit of competence of forensic scientists in specialty 13.6 in criminal proceedings against Trademark infringement is to define the full or partial identity of the TM image to the identified designation on (object display name) and the uniformity (homogeneity) of goods and/or services.

Similarity determination to the degree of confusion of the TM image with the identified designation is a legal issue and goes beyond the procedural and scientific competence of a forensic scientist in specialty 13.6. The lost benefit definition of the TM owner during the investigation of the illegal TM use is a forensic scientist task and the task of an investigator for definition socially dangerous consequences as an element of the objective side of a crime.

All forensic scientist conclusions on the lost benefit determination of the TM owner due to its illegal use are probable or conditional. Amount definition of the lost profits by forensic scientist on the specialty 13.9 in a categorical form, without specifying the conditions for the replacement of the original counterfeit goods sold goes beyond its procedural and scientific competence.

КОМПЕТЕНЦІЯ ЕКСПЕРТА ПРИ СУДОВО-ЕКСПЕРТНОМУ ДОСЛІДЖЕННІ ТОРГОВЕЛЬНИХ МАРОК У ПРОЦЕСІ РОЗСЛІДУВАННЯ ЇХ НЕЗАКОННОГО ВИКОРИСТАННЯ

І. Ю. Поліщук

Окреслено межі процесуальної та наукової компетенції експерта при проведенні судової експертизи об'єктів інтелектуальної власності під час розслідування незаконного використання торговельної марки. Проаналізовано неоднозначне експертне завдання зі встановлення схожості до ступеня змішування виявленого позначення із зображенням торговельної марки. З'ясована проблематика та рамки експертного завдання із визначення упущеної вигоди у зв'язку зі злочинним посяганням на торговельну марку.

Ключові слова: незаконне використання торговельної марки (знака для товарів і послуг); компетенція експерта; судова експертиза об'єктів інтелектуальної власності; економічні дослідження у сфері інтелектуальної власності; упущена вигода.

КОМПЕТЕНЦИЯ ЭКСПЕРТА ПРИ СУДЕБНО-ЭКСПЕРТНОМ ИССЛЕДОВАНИИ ТОВАРНЫХ ЗНАКОВ В ПРОЦЕССЕ РАССЛЕДОВАНИЯ ИХ НЕЗАКОННОГО ИСПОЛЬЗОВАНИЯ

И. Ю. Полищук

На примерах из судебной практики рассмотрены особенности применения специальных знаний в форме судебной экспертизы объектов интеллектуальной собственности в процессе расследования незаконного использования товарных знаков. В работе отдельно отображены вопросы исследования товарных знаков, в том числе по сходству до степени смешения обозначения с изображением товарного знака, а также вопросы экономических исследований в сфере интеллектуальной собственности по установления упущенной выгоды вследствие нарушения прав на товарный знак. В результате проведенного исследования установлено, что пределом компетенции судебных экспертов по специальности 13.6 в уголовном производстве по посягательству на товарные знаки является установление полного или частичного тождества изображения товарного знака с обнаруженным обозначением на (название объекта-отображения) и однородности товаров и/или услуг. Доказано, что определение сходства до степени смешения изображения товарного знака с выявленным обозначением является правовым вопросом и выходит за пределы процессуальной и научной компетенции судебного эксперта по специальности 13.6. Выявлено, что определение упущенной выгоды владельца товарного знака при расследовании незаконного его использования как экспертная задача совпадает с задачей следователя по установлению общественно-опасных последствий как элемента объективной стороны состава преступления. Указано, что все экспертные заключения по определению упущенной выгоды владельца товарного знака, в результате его незаконного использования, являются вероятными и условными. Установление экспертом по специальности 13.9 в категоричной форме размера упущенной выгоды, без указания условия о замещении проданным контрафактным товаром оригинального, выходит за пределы его как процессуальной, так и научной компетенции.

Ключевые слова: незаконное использование товарного знака (знака для товаров и услуг); компетенция эксперта; судебная экспертиза объектов интеллектуальной собственности; экономические исследования в области интеллектуальной собственности; упущенная выгода.

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FORENSIC RESEARCHE ON PAINTINGS

Peculiarities of performing and main directions of research of objects of art examination expertise, namely, works of painting, are considered. Proved the need for an expert to know the technology of creating paintings. Different species of crackleware and its origin are considered. The criteria for determining the time of creation of the work, its authenticity is determined. The necessity of complex researches is indicated.

Keywords: art study research, works of painting, authenticity, crackle, artistic level, technological features.

When performing forensic art criticisms, where objects of research are works of painting, it is necessary to determine the authenticity (authenticity, originality) of the work before solving any questions posed by the investigation. The selection of the methodology and the results of further research depends on this. Consequently, the question which in classical art studies is called attribution is in the forensic examination of art at the same time as the preliminary and the main one.

In the antique market, as well as in the market of works of art, almost always there were false (non-authentic) works. Fake them everywhere. It is unlikely that in the future this problem will disappear by itself - it is very beneficial for such a business, and good, solid, true works, as you know, will never be enough[1].

Artwork is a peculiar and reliable means of accumulation. The cost of them is only increasing over time. They are bought, resold, stolen, forged, imitated, given. In all developed countries there is an antique industry with a

[1] Antique and art market of Saint Petersburg / V. A. Tolmatskyi and others Saint Petersburg : Liki Rossii, 2008. 520 p.

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huge turnover. This is the reason why they often become objects of criminal proceedings[1].

Painting is one of the most widespread antiques and in Ukraine it is the subject of offenses not only criminal, such as theft, fraud, murder, but also civilian — about the distribution of property, compensation of expenses, debt repayment, etc.

As you know, painting is distributed according to the technique of oil, thermal, watercolor and anankastic (wax as a binder for paint). If the first two varieties of painting are performed on different bases, the list of which is quite significant, then the watercolor — on paper and therefore for its study using the common methods used for the graphics. Encaustic in modern times is quite rare and widespread in ancient Egypt and Greece, so in the article it is not considered, as well as fresco painting (painting with dyes on wet plaster).

To understand the significance of the study of painting works it is necessary, first of all, to know the technology of their creation. Works of oil and tempera painting are performed on the basis of which wood, canvas, metal, glass, cardboard, paper can be used. Each of the above materials has its composition, structure and features, which affects their properties, which, in turn, has an impact on the nature and condition of all the components of the painting and, in particular, the paint layer, as the most important feature. The basis affects the state of preservation, and especially the formation of the craquelure, which gives important and significant informative in the expert research of works of painting. Craquelure on the works, where the base is made of wood or cardboard, always appears much later than on the basis of a cloth and in form and distribution has another characteristic, which can determine the time of creation of the work. Craquelure is formed under the influence of various factors, and therefore it differs both in form, places of the orientated location, and the mode of formation - large-seeded, shallow, spherical, spider-shaped, parallel to the horizontal or vertical sides of the product, diagonal, of natural origin or artificial (made). Craquelure with sharp raised edges, similar to broken glass, is called rigid. Another kind of crackle is usually rounded edges and is called soft, floating, friable. In the place of initial education and development, the crackle is distributed as:

— craquelure of varnish origin;
— craquelure of color origin;
— craquelure of soil origin.

In addition to the foundation, the technology of paintwork is influenced by the shape of the craquelure, namely:

– kind of soil - oil, glutinous, emulsion, glued-chalk, gypsum and others;

[1] *Kozlov H.* Assault on art. Moscow: Slovo, 2007. 560 p.; *Hoholytsyn Yu. M.* Great forgery, robbery and theft of works of art. Saint Petersburg: Bright Light, 1997. 448 p.

– technique of painting — oil or tempera;

– paint composition — variety and size (dispersion) of the fraction of pigments;

– concentration and type of astringent (drying and half-whiskey) and solvent;

– the thickness of the painting layer;

– kind of protective coating and its thickness;

– time of applying the coating to painting - dry or crude;

– speed (at which temperature) the drying of the painting.

Varieties of crackle criterion provide additional information, which makes it possible to conclude on the authenticity (authenticity) of the work. Consequently, craquelures are divided into:

- natural that arise at the time of drying due to the difference in the physical properties of the soil and paints — the difference in the rate of drying and the reduction of their volumes leads to the emergence of a voltage which, in turn, when the voltage exceeds the strength of the gap, leads to cracks, which on the surface of the painting form a grid. This type of cracklewares should have a clear-cut character, passing through the soil, a painting layer and a protective coating and uniformly and equally distributed along a plane with a monotonous texture and composition of colors;

– natural, arising under the influence of changes or violations of the temperature-humidity regime — the difference in coefficients of expansion of soil and base materials leads to the emergence of stress in the soil, as a result of which there are emerging cracks, which subsequently spread to the paint and protective layers. In addition, from this, the appearance of shallow aspiring of the soil with a paint layer may occur;

– natural, arising as a result of the use of picturesque materials prone to the formation of a crackle due to the interaction of the drying of binders with such pigments, such as, for example, crash-lacquer and cobalt. The same result is observed when applying light colors to the dark and vice versa due to different drying rates of different colors;

– natural, arising from violations of painting technology, namely:

• craquelure is formed due to the excessive drying rate of the paint layer in combination with the incorrect proportions of the materials of the painting (binders, dyes, pigments, solvents, etc.);

• craquelure is formed from the surface and does not spread to the depth of the paint layer due to repeated declarations on the old (sufficiently dry) previous paint layer;

• craquelure is formed from the surface when a thick layer of protective lacquer is coated with a low (damp) paint layer in the form of islands with rounded edges due to the coincidence of the varnish film;

• craquelure is formed from the surface in the form of fine-grained wrinkles due to excessive use of oil as a solvent when painting a painting;

• craquelure is formed in the paint layer in the form of peels when using oil soils (both factory and self-made), which are naturally inclined to poor-quality adhesion to the paint layer, especially those that are contaminated or made long ago; the oil soils are initially very elastic, but in the process of drying the oil gradually oxidizes, losing elasticity, turning into lipoxin[1].

• The paint coating of the paint layer and the soil is formed in the form of spiral arms with raised edges or in the form of a rigid, milky-shaped crackle with raised edges lagging from the base due to the excessive use of glue in the soil during its manufacture;

• The hard crackle of the paint layer and the soil with the deformation of the cloth is formed due to the use of a thin canvas in a painting with a paste, case letter (a thick paint layer);

– mechanical origin, namely:

• hard craquelure of a paint layer and a soil in the form of a non-wide line, covered with fir-like fractures, which is formed when pressed from the back of the web, due to the use of excess adhesive in the soil during its manufacture;

• craquelure, created by the influence of any mechanical action on the product - transfer, transportation, impact on the basis of, vibration of the web under the influence of air flows (ventilation), winding on the shaft for prolonged storage, or removal from it, etc.;

• craquelure formed due to the effect of moisture when the area and volume of the web and the layer of glue soil change after the product has dried up as a result of soaking, the effect of which did not affect the paint oil layer of the painting. This leads to its coincidence and the formation of convexities that may be detached from the ground, and their combs form craquelure.

Consequently, craquelure in determining the causes and nature of its formation can serve as a criterion for determining the time of creation of the work and, accordingly, its authenticity (authenticity). In non-authentic works for the purpose of publishing them as authentic crackles form by mechanical influence, which is rather easy to recognize, or by breaking the technology of painting, the factors of which are stated above. In this case, it is necessary to establish the purpose of these violations - are not intentional these actions. For this purpose, it is necessary to take into account the results of the study of the state of preservation of all structural components of the object, such as dust pollution in general (bases - boards or cloths with a subframe) and in the middle of craquelure, the conformity of materials used in time to manufacture, etc.

Thus, craquelure is one of the signs of authenticity (authenticity) of works of painting. The study is performed using a microscope of MBS type with an increase of 3 to 100 ×.

[1] *Tytov M.* Definition and description of the state of preservation of works of easel painting: Methodical recommendations Luhansk: Svitlytsya, 2007. 35 p.

Another less important feature in determining the authenticity of the work of art is the technology of making a signature of a well-known author, who must coincide with the time of drawing coinciding with the time of the creation of a picture, as evidenced by the presence of a craquelure shared with all the components of painting — the soil, the paint and protective layers and the signature. In non-authentic works, the ink in the signature comes to craquelure, which is quite easy to see in a microscopic study. Sometimes before the signature, in order to prevent the leakage of paint in craquelure, in place of its location are applied varnish, but in a microscopic study, the signature looks like @hanging in space." There are cases when the signature is performed in a very liquid ink (sometimes even with a watercolor or glue), to prevent it from filling with crackle (solvents dry up, and fine dispersed dyes are not noticeable). In addition, also apply a thick layer of protective film. This is also noticeable in a microscopic study. In addition, the surface must be investigated in ultraviolet rays, which will allow interference with the structure of the work. Sometimes, to prevent detection, it is covered with varnish with the addition of phosphors. Consequently, the conformity of the signature technology is investigated using a microscope and an ultraviolet radiation source of wavelength range.

The correspondence of the handwriting to the author's signature is one of the most important signs of the authenticity of the work, which is determined by the methods of judicial post-graduate research by the relevant specialists and is carried out as a complex art study and post-graduate examination.

Another feature in the study of the authenticity (authenticity) of a painting is the correspondence of the chemical composition of the pigment and the origin of the time of use and the time of creation of the work. So, if in the work, which is the signature of the author who worked in the XVIII century. or in the first half of the XIX century. In the paint layer there is zinc oxide, which began to be used for paints in the second half of the twentieth century, then the product must be considered non-authentic (false). A similar conclusion will be given in the case of the discovery of paint in paints of pigments that do not coincide with the time of their discoveries, for example, ultramarine produced chemically in 1827, or red cadmium, obtained in 1907, etc. The compliance of the chemical composition of dye pigments and their origin with the time of use and the time of creation of the product is one of the most important signs of authenticity, which is determined with the involvement of the relevant specialists in the conduct of a comprehensive judicial forensic science and chemical examination.

The signs of the authenticity of a painting also include the timing of the creation of materials for the basis of design and materials. For example, until the XIV century. Old n craftsmen used the overhead shovels, fastened to the nails, and after the XIV century.

– Mortise bugs of various designs on the back side, and from the XVIII century. – Mounted face shovels on boards[1]. This also applies to canvas, which differs not only with materials of threads, but also manufacturing technology — manual or factory.

An important feature of the authenticity of the work is the artistic peculiarities that are determined by the indicators and criteria of the study of the work under consideration for the works of the author, the signature of which is in the picture. These indicators include:

– style and peculiarities of painting in directions — Futurism, Realism, Impressionism, Cubism, Fauvism, Surrealism, etc.;

– the plot and the content of the image;

– image method — characteristic artistic and technical techniques;

– general artistic level of performance of the work;

– nature of the construction of the depicted composition;

– use of materials — foundations (size, material, arrangement) and painting (type and color of paints);

– character and sequence of application of dye layers for formulation of the final image, determined by X-ray study of the product;

– characteristic techniques at the preparatory stage of a pictorial image - drawing, sketches, pamphlets;

– peculiarities of reproduction of a plan in the process of writing a work - changes in composition or plot up to the content determined by X-ray study of a work;

– color decision of the work;

– technique of drawing the picturesque layers — forging, a la prima, pastas, etc.;

– the method of applying paint layers — spatula, matachins, brushes on a variety of size and material, etc.

The listed indicators of the studied work are compared with the corresponding indicators of the author's creative heritage, which is set out in the special literature (monographs, catalogs, collections of articles, etc.) and museum and private collections, the authenticity of which does not require confirmation. Authenticity (authenticity) of works must be determined in works signed by well-known names, since unknowns do not require authentication. After that, the conclusion is drawn on the basis of the conformity of artistic features. It should be noted that this feature, by some criteria, is not categorical in its effect on the conclusion due to their variability, but in combination with other features or when differing by most criteria one can reach a negative conclusion.

[1] Technology, research and storage of works of easel and wall painting: tutorial. V. Ya. Byrshtein, V. P. Holikov, Yu. Y. Hrenberhand others Edited by Yu. Y. Hrenberhand. Moscow: Izobrazit. iskus., 1987. 392 p.

A characteristic feature of the study of the authenticity of a work is its state, which can be assumed to be the time of production. The conditions of the existence of a work always impose an imprint on his condition not only as a result of mechanical influence, but also natural physical and chemical processes, which leads to aging and destruction of all structural components of the work. Even if the work was stored in perfect conditions, the print time will always be noticeable. Visually this is noticeable on the characteristic change in the color of the base and the transparency of the protective film, the presence of crackle, which, according to the importance of indicators, is one of the main signs of the study of the authenticity of works. In addition, the presence of previous restoration interventions in their effects and character may indicate their imitation.

Physico-Chemical processes of destruction and aging of the cloth are especially fast when violating the temperature-humidity regime during storage. Particularly, the canvas is destroyed at high humidity or dryness, direct sunlight, insecurity from ultraviolet rays, air pollution by dust, which precipitates on the canvas and contributes to the formation of bacteria that affects the physical and chemical processes occurring in the fibers of the canvas. Cooled air at high humidity can chemically form acid pairs, which adversely affects the canvas[1].

On the basis of wood is also affected by time — it loses moisture (crumbles), deforms, it accumulates stress, which leads to cracking of boards. When drying and reducing the plane of the base from it, there may be separation and partial loss of the paint layer, or the emergence of a typical species of crackle-like dangers. In addition, wood can be damaged by beetles-grinders, wood-grazes or by the action of mucoromycetes and other types of biological factors.

The state of the foundation significantly affects the more vulnerable part of the work - painting, which also falls under the action of time and mechanical damage. It may have partial losses of different nature and causes, scum, molestation, gasses, consequences of unprofessional restoration and negligent attitude or even intentional damage.

Thus, a visual study of the state of a work can provide significant information that will affect the conclusion about the authenticity of the work of painting, but it is necessary to clearly differentiate the damage: intentional — in order to increase the time of existence of the work and natural, appearing in the process of being.

The listed signs of authenticity (authenticity) provide an action plan for those who want to publish a non-authentic work of painting for authentic, that is, to make a fake, but it should be noted that studies carried out in full and

[1] *Miasnykova Yu.* Attribution and expertise as key aspects of the antique market. Antiques Art and Collectibles. Moscow. 2007. № 11(52).

with the use of appropriate methods and equipment almost exclude this possibility. Non-authentic works are often found on the antique market, but they are manifested because in one work it is almost impossible to withstand all signs of authenticity, in the best case, the coincidence of signs is partial, and their detection depends to a large extent on both methodological and technical support as well as professional training and the experience of expert-art critic.

An example of non-authentic paintings that are typical of manufacturing technology and the most common are shown below (Fig. 1–3).

The work, published for the painting by Poltava artist I. I. Orlov. Artistic level, technological features and signature that are not author's, testify to its uncertainty. The painting is old, but it is a vague copy of the little-known work of the Russian artist O. I. Morozov.



Fig. 1. The non-authentic work, which is issued for the authorship of I.I. Orlov, is a general view



Fig. 2. The non-authentic work of I. I. Orlov, the reverse side, indicating a significant age of the basis of the product



Fig. 3. Signature on behalf of I.I. Orlov, performed by an unknown person

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PECULIARITIES OF THE OF MAKING DECISION IN MILITARY FIELDPROCEDURE

Attention is paid to the insufficient number of research questions on the scientific and methodological support of forensic expert activity in the military field. Based on the analysis of the main functions of troop management, the essence of the decision-making process for combat and planning of combat operations is disclosed. The peculiarities of the decision-making process in the military sphere, taking into account modern conditions, are determined.

Keywords: forensic expert activity in military field, functions of army management, decision-making, planning of combat operations.

In connection with introduction of the new expert specialization field *Military Research* in the system of forensic science institutions of the Ministry of Justice of Ukraine in 2015, today there is a complex of unresolved scientific and practical problems in this area of forensic expert activity. The most significant problem is the lack of scientific and methodological support (SMS). It should be noted that in the scientific literature, in connection with the lack of such a kind of forensic examination as the Forensic Military Science (FMS), until recently there are only isolated publications on the research of SMS issues of forensic expert activity in the military sphere.

Analysis of the expert practice of the Kharkiv RIFE demonstrates during the last period the number of appointments of the FMS has significantly increased. It should be noted that this trend is progressive. The lion's share of the conclusions of the FMS in practice is based on the results of a comprehensive form of research, that is, its specialists are involved in various expert fields. The results of their research in aggregate provide the basis for the formation of a general conclusion of the examination. Therefore, an important problem is the development of a general methodology for solving the tasks of a comprehensive judicial military expertise, that is, the development of a general algorithm for the actions of experts of various

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specialties in the process of cooperation of their special knowledge in the form of complex expertise. Along with this problem, there is another, which is closely connected with the first, namely, the discovery and scientific analysis of "boundary", tasks of forensic examinations. On the basis of what in Kharkiv RIFE was initiated (R&D) on the topic *Methodology of forensic research of the work of commanders (headquarters) and military formations in the preparation and execution of combat (military and combat) tasks*. The purpose of this R&D is to develop a methodology that describes the main methodological provisions used in the implementation of the FMS related to the study of the activities of commanders (headquarters) and military units in the preparation and execution of combat (military and combat) tasks.

The regularities of the decision-making process and the issues of its optimization are the subject of scientific research, which are conducted in two directions. The first direction was reflected in the theory of decision-making. The second one studies behavioral aspects of decision-making by a person and forms the subject of psychological decision-making theory.

The purpose of the article is to determine the peculiarities of the forensic expert investigation of the decision-making process in the military sphere, taking into account modern conditions.

It is known that one of the main functions of the control of troops is the acceptance of the commander of the battle solution and the planning of hostilities. The essence of any decision is to determine the goals of action and the choice of forces, means, methods and time of its achievement. In any management system involving human decisions is the result of his knowledge, creativity, experience and will. Without denying the role of the latter, it should be noted that the will must be based on a deep knowledge of laws operating in a particular environment, the correct assessment of the objectively formed situation, the available forces and means, otherwise inevitable subjectivism and voluntarism. The volitional impulse of a person is useful when it is a reflection of the objective world. This is especially important in the decision-maker's decision to fight, since its scientific validity, compliance with the combat environment depends not only on the success of the troops performing a military task, but also on the life of the subordinate personnel, and on the operational and strategic scale the fate of the country as a whole, its social and political system. This is due to the fact that the battle is fundamentally different from any other social phenomenon. Any battle is an integral part of the bilateral armed struggle, in which the enemy also seeks to destroy our troops. At the same time, modern troops are not only military equipment (missiles, tanks, guns and other military equipment), but above all the people who use it, which are organized in different units and are constantly subjected to mortal danger. They always have a sense of fear and self-preservation. The decision of the commander to fight in these conditions is intended to unite them into a single whole, to provide a clear interaction

between them for purpose, time and place, subject their actions to the sole will of the commander.

Given the above, one can give such a definition of the essence of the decision of any commander to the battle: the solution to the battle; it is based on the laws and principles of martial arts, on the correct elucidation of the combat task and the assessment of the situation, the result of creative thinking and will of the commander, which determines the purpose military actions, forces, means, methods and timetables for its achievement, as well as the tasks of subordinates.

The most important requirement for a decision on a battle is its scientific validity, that is, the correspondence with the situation that has been formed and which is expected, the received task, the designation of the senior commander, the laws and principles of the conduct of military operations, enshrined in the charters. Only in this case, the decision can be a reliable basis of management.

It is especially important that the decision was unexpected (sudden) for the enemy, was based on the appropriate calculations of combat capabilities of the parties and provided the best (optimal) use of their forces by the means of defeat, gave the greatest effect, causing maximum losses to the enemy and reducing to a minimum the losses of their troops. The decision taken “on the eye”, which does not correspond to the situation, leads either to arming the unrealistic (impossible) tasks of the troops, or to incomplete use of their combat capabilities. In the past, such mistakes made themselves felt gradually and could be eliminated in the course of hostilities. In modern combat, they can be immediately and fraught with much more severe than before, irreparable consequences, including the failure of whole elements of the combat order of troops and unjustifiable death of personnel. It should also be noted that the false decision on the battle negatively affects the moral and psychological state of the personnel of subordinated troops, undermining his belief in the ability of his commander and the ability to perform the task.

The fulfillment of the requirements put forward for a decision, especially with regard to its optimality and timeliness of adoption, is complicated by the fact that, unlike in the past, the time for the preparation of hostilities has decreased significantly, and the volume of management measures has increased.

In addition to the increased value of optimality (validity) and timeliness, the solution to the battle differs from the decisions in other fields and the fact that its quality cannot be checked for practical reasons (rehearsed) before the beginning of hostilities in conditions which are absolutely similar to them. This feature of the commander's decision was described in detail by K. Simonov in the novel *Soldiers Are Made, Not Born*. One of the characters of this work says: “There are no rehearsals in the war, on which one can play first for a trial; not so, and then as it should. In the war, there are no drafts that

can be torn and overwritten. Everything here is written with blood, everything from the beginning and the end, from the basement to the last point ... ".

This disadvantage can be compensated to a certain extent by mathematical modeling of a decision on future military actions and its verification by means of electronic computers (computers). This method, as we know, is widely used nowadays in making decisions and planning production. Its implementation is a characteristic feature of modern management science. The needs for management of complex military formations and economic (production) objects have led to the implementation of special methods that facilitate the adoption of optimal solutions. These methods are now accepted to combine the term *Applied Mathematics*. From the time of its appearance, mathematics has always been used in military affairs in one form or another. Based on a variety of mathematical methods, a set of settlement tasks helps command and staffs to find answers to a specific group of issues that may arise at all stages of the preparation and conduct of hostilities[1]. Forecasting as a special method of scientific knowledge plays an important role in the management of troops, especially in decision-making, since these predictions form the scientific basis of any decision[2].

In combat conditions, there is always the presence of incomplete, false, contradictory information (and even disinformation), when the initial data will be partially, and sometimes completely absent, or at best, go to the management bodies in the form of interval values such as "from ... to ... "Or in the form", with probability no less ... "presumably ... "approximately ... "no less ... "no further ... "etc.[3]

Consequently, the differences between decision-making processes in the daily activities of the unit and decision-making in a combat environment is one of the most important reasons for the severe psychological stress on the commander when making a military solution. In this sense, between the adoption of a military solution and the adoption of ordinary, the following basic differences are defined:

1. *Uncertainty of situation.* In battle, there are very rare situations when the situation is completely understood. For each "behind", there is a similar "against". Therefore, in the course of preparation, one should strive to reduce (decrease) uncertainty, that is, that new and unknown, with which a person can meet in battle.

[1] *Osnovy i primenenie metodov prikladnoj matematiki v voennom dele: uchebnik / pod red. P. I. Ivanova* (1991) [Fundamentals and Application of Applied Mathematics Methods in Military Affairs: manual / edited by P. I. Yvanova]. Mobnino: Gagarin Air Force Academy. 512 p. [in Russian].

[2] *Informatika v voennom dele* (1989) [Computer Science in Military Affairs]. Moscow : DOSAAF, 127 p. [in Russian].

[3] Kondratev V. V. Nychypor V. Y. Kostenko A. N. *Informacionno-raschetnoe obespechenie upravlenija vojskami v uslovijah informacionnoj neopredelennosti. Voennaja mysl'* (2013) [Information and calculation of troop control in conditions of information uncertainty. Military thought]. № 11. P. 21–34. [in Russian].

2. *Inability to achieve "ideal", combat result, fear of errors.* Even after a complete preparation for combat, actions can be unsuccessful or combined with losses. The enemy or the nature may be stronger, in the battle possible all sorts of surprises that can break all plans. In battle, even "right", actions can lead to "wrong", result and, conversely, false actions may end up with a "correct", result. In everyday life, people often can choose from a range of possible actions the most expedient and intelligent solution. In the battle, the only correct decision, as a rule, does not happen. More precisely, at the time of making a decision to choose one of several options, it is impossible to determine whether a particular decision is correct or not.

3. *Fear of responsibility.* Responsibility can be different before yourself, moral, before leadership, criminal, etc. However, in any case, a person does not want to have problems for himself because of the negative result of his actions. In everyday life, the responsibility for the "wrong", result should be. In order to avoid the risk of liability, you need to act "correctly". In a battle, when to achieve a "positive", result, that is, the task without loss is practically impossible, the result is usually "wrong". Accordingly, the serviceman seems that responsibility in one form or another comes almost for any action.

4. *Lack of time for reflection and consideration of all possible actions.* Events can develop so rapidly that solutions must be made lightning fast.

5. *Unclear purpose of action or apparent pointless action.* Often, the general purpose of the action in battle is unclear, including that it can be deliberately concealed by the command, to avoid unmasking the enemy plan of operation.

At the same time, the decision-making process for a joint battle involves considerable difficulties, which lie in the following.

First, a series of outputs for the mathematical modeling of the situation data regarding the status of the personnel of the enemy troops, are not measurable, but at the same time are important, even crucial for decision-making and success in battle.

Secondly, every new battle never happens to be an exact copy of the previous one, because there is no identical situation on which the decision is made.

Thirdly, in the present-day joint combat battle, several units of the branches of troops and special forces, which differ significantly from each other in accordance with their purpose, organization, arms, capabilities and ways of action, take part. It should be noted that modern military formations are complex systems consisting of many interconnected military objects. If the number of such objects increases according to the linear law, then the number of links between them increases, at least, under the quadratic law. In such circumstances, it is difficult or even impossible for a talented military commander to effectively lead combat training or combat activities without involving the latest advances in science and technology.

Fourth, the reasonableness of the decision to fight must be assessed not by any one criterion, but rather by several indicators that are different in nature, such as: anticipated losses of the enemy, prevention of losses or possible losses in their troops, costs of material resources and time to execute combat task, seizure (retention) of the area, as well as socio-political consequences of future military action.

Fifth, in a combat environment better success can often be achieved by the commander who, from a purely mathematical point of view, will take a less substantiated, but unexpected solution for the enemy. O. V. Suvorov said: "Who surprised, he won", — and this aphorism has a profound sense in modern conditions. The battle is, above all, the confrontation of minds, the struggle of the intellect. In bare numbers and in any formula, every commander must see living people, their troops and opponents opposed to them, sometimes intelligent and insidious, who knows our tactics, our "algorithm", for making decisions and fighting.

Thus, the commander faces many contradictions in the decision-making process, the main of which there is a contradiction: between the need to have a scientifically based solution and the difficulty in obtaining all the necessary data for this situation.

Practice and theoretical studies show that in order to successfully solve all these and other contradictions in the decision-making process, first of all, a close combination of logical and mathematical methods, as well as the deep knowledge and experience of the commander, his ability to think creatively, courage, determination, strong will, developed intuition, prediction of future combat actions, trick, ability to go for reasonable risk and take responsibility for its consequences. In the decision of the commander, therefore, the focus is concentrated on his ideological, political, philosophical, mathematical and purely military knowledge, as well as experience and subjective moral-will qualities that will often play an important role in achieving success in battle. In this case, mathematics and computing is only a powerful "tool", that enhances creative possibilities, the art of officers making a well-founded decision.

Thus, when the troops are being commanded during combat operations, the commander and the authorities in order to maintain a high level or restore the lost combat capabilities of the troops and to achieve the successful completion of their combat mission, do nothing but: continue to collect and study data on the real situation ; specify in accordance with her previously made decision, and with a sharp change in it take a new decision; bring to the subordinates clarified or new tasks, support the continuous interaction of troops; manage the implementation of measures to ensure combat operations; ensure the continuity of troop control and restore it in case of violation.

The decision-maker's approval of a battle is inextricably linked with such a concept as the planning of military operations of troops. This is logical, and

from a technical point of view — the only and inextricable process. It is fundamentally wrong to think that originally the commander decides to fight and only then the headquarters begins to plan military operations. This is not true, but in practice it inevitably leads to delays, loss of time, bureaucracy, and so on. When the commander decides to fight, that is, outlines the plan of action, the combat tasks of the subordinate troops with the definition of which enemy, where and when they should defeat, where to strike the main blow, how to build a military order, how to support interaction on tasks, boundaries (objects) and at times, thus, he already carries out nothing other than the planning of military operations, while fulfilling the main tasks of planning. That is why the decision is the basis of planning.

After the decision is made, the planning process does not begin, but proceeds and ends. At the same time, the headquarters and chiefs of the branches of the troops and services under the command of the commander specify and detail the individual elements of the decision, especially those concerning the methods and terms of the troops' operation, the order of their interaction and provision, substantiate their necessary calculations and additional data of the situation. If there is no such opportunity (for example, in the absence of time), then they are limited to making a decision. For these reasons, the term “battle planning or operation”, is often used only when it comes to the work of commanders and senior management, starting with the brigade. However, this does not mean that commanders of the mouth and battalions do not have their plans for battle. Their decisions on the battle, recorded in memory or displayed on a map (schema) and detailed “played”, with subordinates on the ground — this is their plans, models of future military action.

When carrying out in the Kharkiv Research Institute of Forensic Researches on the Materials of Criminal Proceedings, which came from the military prosecutor's offices of various regions of Ukraine, judicial experts in the field of “Military Studies”, necessarily took into account the main provisions of the theory of command of troops in the organization of hostilities in general, and in terms of decision making and planning. During the execution of military examinations, issues of the organization of certain actions by certain military formations were studied through the study of the content of orders, orders on the organization of the tasks performed and their correspondence with the purpose, the choice of forces, means, methods and time of its achievement. On the basis of this, conclusions about the conformity (non-conformity) of military formations to the requirements of the governing documents were made, as well as the causal relationships between the actions (inactivity) of certain officials and the consequences emerged.

According to the results of expert practice, it was possible to identify certain factors that impede the adoption of appropriate decisions in the military sphere by the relevant officials and their forms of expression, which

are to be taken into account during the forensic investigation. It should be noted that these factors follow and is a logical continuation of the specified peculiarities of the decision-making process in the military sphere. In our opinion, the following factors should be considered as factors contributing to the emergence of a tendency in behavior aimed at avoiding decision-making.

1. *Fear*. Fear of death or injury, fear of being captured, including fear of others. This fear is a manifestation of one of the basic instincts of man — the instinct of self-preservation. It should be borne in mind that fear has the so-called "tunnel", effect. All human attention is focused on the source of fear and all actions are concentrated on the evasion of this source. Even a high-ranking commander who is not in immediate danger, first of all thinks about himself, but not about controlling the battle, although he is relatively remote from the source of danger. It is known that only a small part of the troops, having fallen under the fire of the enemy, is more or less aiming fire (about 15 %). Others either do not shoot at all, or shoot not aiming, wasting ammunition, seek to immediately open the fire, being on the position, not even having determined the purpose and setting of the sight. Getting under the fire of an adversary, they do not think about the task, all thoughts focus on simulating actions or evasion from the battle.

2. *Combat stress or psychological exhaustion.* The result of combat stress can be both excessive activities, and attempts not to pay attention to the difficulty of the situation. If the reaction to combat stress is inhibition of the nervous system, then the result will be inactivity, lack of initiative and negligence.

3. The effect of war on the distance. A serviceman, without seeing an opponent, considers him as unrealistic and non-existent, cannot believe that someone wants to cause him real harm.

4. Unwillingness to come from a state of relative comfort, a desire to maintain its own prestige (to show that there is no need for advice from subordinates, that the order that was previously given is correct), the perception of combat activity, as well as any work, such as punishment, laziness.

In the behavior of a person, evasion from the adoption of military decisions can be expressed in the following forms:

1. Decision transposition from one another to another.

2. Transmission of the severity of the decision of the subordinate.

3. Delay with decision making.

4. Blind adherence to orders, observance of the martial law or other instructions.

5. Setting that no tasks are present. The meaning of this form of evasion reduces to the formula "no order — then, I do not need to do anything.",

Based on the above, it is possible to determine the following.

Changes in means and methods of conducting military operations have a significant effect on the management of troops by commanders and headquarters of all levels.

Important in this case: high combat capability of commanders and headquarters in the management of troops, rigidity, flexibility, continuity (stability), concealment and high efficiency of management in any difficult environment.

Practice and conducted studies have shown that command and control of troops is a complex and multifaceted problem requiring an integrated approach, implementing an entire system of technical, organizational and research activities.

Thus, under the current conditions of the FMS and in its basis, forensic-expert studies of the decision-making process in the military sphere are complex. Taking into account the peculiarities of the decision-making process in the military sphere will enable the organization of the work of experts to be improved and will contribute to the successful implementation of the tasks of justice.

КОМПЕТЕНЦІЯ ЕКСПЕРТА ПРИ СУДОВО-ЕКСПЕРТНОМУ ДОСЛІДЖЕННІ ТОРГОВЕЛЬНИХ МАРОК У ПРОЦЕСІ РОЗСЛІДУВАННЯ ЇХ НЕЗАКОННОГО ВИКОРИСТАННЯ

І. Ю. Поліщук

Окреслено межі процесуальної та наукової компетенції експерта при проведенні судової експертизи об'єктів інтелектуальної власності під час розслідування незаконного використання торговельної марки. Проаналізовано неоднозначне експертне завдання зі встановлення схожості до ступеня змішування виявленого позначення із зображенням торговельної марки. З'ясована проблематика та рамки експертного завдання із визначення упущеної вигоди у зв'язку зі злочинним посяганням на торговельну марку.

Ключові слова: незаконне використання торговельної марки (знака для товарів і послуг); компетенція експерта; судова експертиза об'єктів інтелектуальної власності; економічні дослідження у сфері інтелектуальної власності; упущена вигода.

КОМПЕТЕНЦИЯ ЭКСПЕРТА ПРИ СУДЕБНО-ЭКСПЕРТНОМ ИССЛЕДОВАНИИ ТОВАРНЫХ ЗНАКОВ В ПРОЦЕССЕ РАССЛЕДОВАНИЯ ИХ НЕЗАКОННОГО ИСПОЛЬЗОВАНИЯ

И. Ю. Полищук

На примерах из судебной практики рассмотрены особенности применения специальных знаний в форме судебной экспертизы объектов интеллектуальной собственности в процессе расследования незаконного использования товарных знаков. В работе отдельно отображены вопросы исследования товарных знаков, в том числе по сходству до степени смешения обозначения с изображением товарного знака, а также вопросы экономических исследований в сфере интеллектуальной собственности по установления упущенной выгоды вследствие нарушения прав на товарный знак. В результате проведенного исследования установлено, что пределом компетенции судебных экспертов по специальности 13.6 в уголовном производстве по посягательству на товарные знаки является

установление полного или частичного тождества изображения товарного знака с обнаруженным обозначением на (название объекта-отображения) и однородности товаров и/или услуг. Доказано, что определение сходства до степени смешения изображения товарного знака с выявленным обозначением является правовым вопросом и выходит за пределы процессуальной и научной компетенции судебного эксперта по специальности 13.6. Выявлено, что определение упущенной выгоды владельца товарного знака при расследовании незаконного его использования как экспертная задача совпадает с задачей следователя по установлению общественно-опасных последствий как элемента объективной стороны состава преступления. Указано, что все экспертные заключения по определению упущенной выгоды владельца товарного знака, в результате его незаконного использования, являются вероятными и условными. Установление экспертом по специальности 13.9 в категоричной форме размера упущенной выгоды, без указания условия о замещении проданным контрафактным товаром оригинального, выходит за пределы его как процессуальной, так и научной компетенции.

Ключевые слова: незаконное использование товарного знака (знака для товаров и услуг); компетенция эксперта; судебная экспертиза объектов интеллектуальной собственности; экономические исследования в области интеллектуальной собственности; упущенная выгода.

FORENSIC PSYCHOLOGICAL AND MEDICAL EXAMINATION

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ON THE POSSIBILITIES OF PSYCHOLOGICAL EXAMINATION OF VICTIMS OF CRIMES RELATED TO HUMAN TRAFFICKING

Legal grounds and theoretical and methodical questions concerning conducting of forensic-psychological examination of victims in the investigation of criminal offenses provided for in Art. 149 of the Criminal Code of Ukraine. The psychological grounds for the legal qualification of the vulnerable state of the victims, the subject, the object and the main tasks in the aspects of scientific psychology and forensic expert studies are determined.

Keywords: trafficking in human beings, expert practice, personality, activity, volitional act, psychological vulnerability, psychological dependence, expert method.

The Constitution of Ukraine recognizes and guarantees the basic rights, freedoms and duties of a person and a citizen in accordance with generally accepted norms of international law. Article 21 of the Constitution of Ukraine proclaims the right of all people to freedom and equality in their dignity and rights that are inalienable and immutable; Art. 23 the right of a person to the free development of his personality is enshrined, provided that the rights and freedoms of other people and duties towards society are not violated, in which the free and comprehensive development of his personality is ensured; Art. 33 guarantees the right of a person to freedom of movement, free choice of place of residence, the right to freely leave the territory of Ukraine; Art. 43 enshrined the right of every person to work, which she freely chooses or freely agrees, the use of forced labor is prohibited.

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However, despite the guarantees of international legal requirements, the current state of criminal offenses has a worldwide tendency to increase the traffic in human beings, which is predominantly transnational organized crime. This type of crime over the past decade has become a scale that threatens the national security of any state.

Ukraine was the first among the post-Soviet states to recognize the problem of trafficking in human beings as one of the most dangerous for society, having introduced in 1998 the Criminal Code of Ukraine (Criminal Code of Ukraine) Art. 124[1] (*Human trafficking*). In 2001, the new Criminal Code of Ukraine was adopted, in which Art. 149 (*Human trafficking or other illegal human rights*) acts against freedom, raising the value of the individual to the level of its material valuation, sale and purchase of a person are recognized as a serious crime against the individual[1].

According to the OSCE, trafficking in human beings in Ukraine is growing rapidly, due to a number of socio-economic and, to some extent, political reasons, which include: the grave economic situation of citizens and unemployment; insufficient awareness of opportunities for employment abroad; the demand for cheap labor abroad and illegal labor migration; active activity of criminal gangs and lack of prosecution of traffickers; domestic violence; corruption; military conflicts[2].

In 2011, the Law of Ukraine *On counteraction to trafficking in human beings*, was adopted, which defines the organizational and legal principles of combating human trafficking, guarantees of gender equality, main directions of state policy and the principles of international cooperation in this area, the procedure for establishing the status of persons who have suffered from trafficking in human beings, and the procedure for assisting such persons[3].

Based on the contents of Art. 149 of the Criminal Code of Ukraine, the main direct object of a crime is an attack on the will and dignity of a person subject to proof. According to note 2 to Art. 149 one of the qualifying attributes of this type of offense is the vulnerable state of the injured person, which is caused by physical or mental properties or external circumstances, which deprive or limit its ability to realize their actions (inaction), or to direct them, to make independent decisions, to resist violent or other unlawful acts, coincidence of serious personal, family or other circumstances.

[1] *Kryminalnyi kodeks Ukrainy : Zakon Ukrainy* [Criminal Code of Ukraine : The Law of Ukraine] dated on: 05.04.2001 № 2341–III (as amended dated on:10.06.2018). URL: http://zakon3.rada.gov.ua (Date accessed: 14.05.2018) [in Ukrainian].

[2] *Osveshhenie v sredstvah massovoj informacii problemy torgovli ljud'mi. Posobie dlja zhurnalistov/OSCE* (2007) [Media coverage of the problem of trafficking of human beings. Guide for journalists/OSCE]. Kyiv : Yntertekhnolohyia. URL: https://www.osce.org. ru (Date accessed: 26.05.2018) [in Ukrainian].

[3] *Pro protydiiu torhivli liudmy: Zakon Ukrainy vid 20.09.2011 № 3739-VI. Vidom. Verkhov. Rady Ukrainy* [On counteraction to human trafficking : Law of Ukraine dated on: 20.09.2011 № 3739–VI. Bulletin of Verkhovna Rada of Ukraine] 2012. № 19–20, p. 173 [in Ukrainian].

In the studies of domestic specialists, it is noted that socio-psychological factors contributing to trafficking in human beings are essential. Researcher lawyers, sociologists, psychologists and others identified the categories of Ukrainian people who are most vulnerable to trafficking in human beings, namely: unmarried women aged 18–26 (as potential victims of sexual exploitation) who have low and very low levels of material support; men aged 31-60, first of all — married, who are vulnerable to labor exploitation; children (mostly girls) aged 13–18 from incomplete and restructured families[1].

According to O. V. Kovalova, the most important is the study of socio-psychological factors in the area of human trafficking. It highlights vulnerable groups that are highly likely to be the targets of this crime, and notes that such groups are not static because political and economic situations in Ukraine are changing. O. V. Kovalova highlights a new risk group for Ukraine — internally displaced persons from the conflict zone[2].

As A. Orlean notes, the notion of a vulnerable state, defined in note 2 to Art. 149 of the Criminal Code of Ukraine, is a legal category. The author highlights the vulnerable state of two types: physiological and social. Physiological vulnerability is conditioned by physical or mental properties or external circumstances, the state of a person who deprives or limits his ability to realize his actions (inaction) or to manage them, to take independent decisions on his own accord, to resist violent or other illegal actions; can be caused by mental properties (the presence of certain diseases, disorders or deviations in mental activity, etc.), physical properties (the impossibility to resist illicit actions due to physical illness, certain physical defects, etc.) and certain external factors (for example, bringing the person to the unconscious state by application sleeping pills or narcotic drugs). According to A. M. Orlean, the presence or absence of a physiological vulnerable state of the victim and its use by the accused during the commission of a crime may (but not necessarily) be confirmed by the results of medical, psychological, psychiatric or complex examination of the victim. To the social form of a vulnerable state, the author refers to a set of such circumstances that forces a person to agree to be exploited. At the same time, for a socially vulnerable state, the person's ability to understand, control, and resist unlawful influence

[1] *Sotsialnyi analiz osnovnykh chynnykiv torhivli liudmy: realna sytuatsiia ta shliakhy zapobihannia: monohrafiia / A. V. Aleksieieva, Yu. M. Halustian, K. B. Levchenko ta in.* [Social analysis of the main factors of trafficking in human beings: the real situation and prevention ways: Monograph / A. V. Aleksieieva, Yu. M. Halustian, K. B. Levchenko and others]. Kyev, 2003. 91 p.

[2] Kovalova O. V. (2016) *Poperedzhennia yak napriam protydii torhivli liudmy. Protydiia nezakonnii mihratsii ta torhivli liudmy: materialy Mizhnar. nauk.-prakt. sympoziumu, m. Ivano-Frankivsk, 11–12 berez. 2016 r.* [Warning as a way of counteracting human trafficking. Countering Illegal Migration and Trafficking in Persons: Content of the International Academic Conference and symposium Ivano-Frankivsk, 11–12 March. 2016]. Ivano-Frankivsk : The King Danylo University, p. 67–70 [in Ukrainian].

is not a characteristic restriction. A. M. Orlean observes that the presence of a socially vulnerable state should, first of all, be confirmed not by the results of examinations, but by a combination of evidence of the existence of a number of serious personal family or other circumstances[1].

In our opinion, A. Orlean position on conducting forensic examinations (in particular, psychological) with a view to establishing the presence or absence of a vulnerable state of the victim is quite expedient. However, one cannot agree with the allocation of A. M. Orlean of two types of vulnerable state of victims (physiological and social), since any activity of the individual is realized under specific social conditions and is accompanied by a certain mental state. Therefore, socio-psychological factors that can cause a person's vulnerable state are a holistic, multidimensional phenomenon.

As it follows from the comment. 2 to Art. 149 of the *Criminal Code of Ukraine*, legal signs of the vulnerable state of the victim relate to the socio-psychological parameters characterizing the mental activity of the individual, limiting her ability to fully understand the nature of their actions, fully anticipate their consequences and manage them and make an independent decision. That is, in a psychological sense, a person's vulnerable condition implies that he or she depends on someone (other persons) or something (life circumstances), which, from a legal point of view, gives another person the opportunity to manipulate the victim, thus making him psychologically influential.

The object of forensic psychological examination (research) of victims in cases related to trafficking in human beings is a person as a person and sources of information containing information about the mental activity of the victim in legally significant circumstances.

The subject of forensic psychological research (expertise) of victims in cases related to trafficking in human beings is the specifics of voluntary regulation of activity, which is essential in making a vital decision.

Since the legal concept of "vulnerable state", is evaluative, the tasks of this type of research are the establishment of individual psychological characteristics of the victim's personality, his motivational sphere, intellectual and emotional-volitional spheres, peculiarities of the activity in the situation of the said offense, and other psychological factors that may be premorbid for the formation of his dependence on another person or certain life

[1] Orlean A. M. (2016) *Oznaky skladu zlochynu «Torhivlia liudmy abo insha nezakonna uhoda shchodo liudyny», yaki potrebuiut naibilshoi uvahy pid chas praktychnoho zastosuvannia tsiiei normy. Protydiia nezakonnii mihratsii ta torhivli liudmy: materialy Mizhnar. nauk.-prakt. sympoziumu, m. Ivano-Frankivsk, 11–12 berez. 2016 r.* [Signs of the crime "Trafficking in persons or other unlawful human rights", which require the greatest attention during the practical application of this norm. Countering Illegal Migration and Trafficking in Persons: Content of the International Academic Conference and symposium Ivano-Frankivsk, 11–12 March. 2016], Ivano-Frankivsk : The King Danylo University, p. 112–116 [in Ukrainian].

circumstances, manipulation of the volitional activity of the victim upon making him a vital decision, not in any way limiting the regulation of its activities. In the course of solving these problems, the leading individual psychological and motivational factors of the victim, which influenced her activity in a legally significant situation, are analyzed. The compliance of the sentence of the accused with the victim's basic needs, his individual psychological characteristics, the existing life situation and the degree of socialization are established; the specifics of the awareness of the victim of the said proposal as acceptable are identified, which are weak (vulnerable) links in the structure of the victim's personality when making a vital decision and facilitates (or may facilitate) a conscious choice in favor of the sentence of the accused person.

The psychological analysis of the choice of the victim in favor of the accused's sentence is to establish the subordination of its activities to the leading need for certain earnings, the degree of initiative, activity, multi-stage, a number of efforts inherent in complex volitional activity.

As a result of psychological research, the degree of conscious activity of the victim, which has (or does not have) all the necessary signs of complex volitional behavior, is established.

In favor of the relevance of forensic psychological expertise in investigating offenses involving trafficking in human beings or other illegal human rights deals, there is an increasing demand from law enforcement agencies and the court for research on this type. In particular, starting in 2010, judicial and prosecuting authorities actively appoint forensic psychological examinations in criminal cases related to sexual exploitation of a person or its use in porno business, with forced labor of man, slavery, debt bondage, adoption (adoption) for the purpose of profit, involvement in criminal activity, use in armed conflicts, etc. This tendency, taking into account the transnational nature of the investigation of crimes provided for in Art. 149 of the *Criminal Code of Ukraine*, has prospects for growth.

However, now conducting forensic psychological examinations, designated for criminal proceedings, provided for in Art. 149 of the Criminal Code of Ukraine, is carried out in the absence of an appropriate expert methodology and not developed theoretical and methodological aspects that should be the basis of this type of psychological study. In the Poltava branch of the Hon. Prof. M. S. Bokarius Kharkiv Research Institute of Forensic Examinations created for the first time a method of forensic psychological examination of victims in investigating offenses involving human trafficking or other illegal human rights transactions aimed at developing unified algorithms for expert research.

ЩОДО МОЖЛИВОСТЕЙ СУДОВО-ПСИХОЛОГІЧНОЇ ЕКСПЕРТИЗИ ПОТЕРПІЛИХ ЗА ЗЛОЧИНАМИ, ПОВ'ЯЗАНИМИ ІЗ ТОРГІВЛЕЮ ЛЮДЬМИ

Т. М. Єгорова, С. Г. Мороз

Розглянуто правові підстави та теоретико-методичні питання щодо проведення судово-психологічної експертизи потерпілих при розслідуванні кримінальних правопорушень, передбачених ст. 149 КК України. Визначено психологічні підстави для правової кваліфікації уразливого стану потерпілих, предмет, об'єкт і основні завдання в аспектах наукової психології й судової експертології.

Ключові слова: торгівля людьми, експертна практика, особистість, діяльність, вольовий акт, психологічна уразливість, психологічна залежність, експертна методика.

О ВОЗМОЖНОСТЯХ СУДЕБНО ПСИХОЛОГИЧЕСКОЙ ЭКСПЕРТИЗЫ ПОТЕРПЕВШИХ ПО ПРЕСТУПЛЕНИЯМ, СВЯЗАННЫМ С ТОРГОВЛЕЙ ЛЮДЬМИ

Т. М. Егорова, С. Г. Мороз

Рассмотрена проблема торговли людьми, имеющая транснациональный, масштабный характер и угрожающая национальной безопасности государств. Приведено данные OSCE, в которых указано на ряд социально-экономических и политических факторов, обусловливающих рост торговли людьми в Украине. В обзоре основных законодательных актов Украины указано на организационно-правовой регламент противодействия торговле людьми, на направления государственной политики и международного сотрудничества. Рассмотрены исследования украинских специалистов, изучающих социально-психологические факторы, которые могут иметь существенное значение для преступлений, связанных с торговлей людьми. Определены объект, предмет и задачи судебно-психологического исследования потерпевших по преступлениям, подпадающим под действие ст. 149 УК Украины. Проведен анализ примечания 2 к этой статье с позиций правовых (квалифицирующих) признаков уязвимого состояния потерпевшего лица, а также с позиций научной психологии и судебно-психологической экспертизы. В частности, поскольку правовое понятие «уязвимое состояние» относится к категории оценочных, заданиями психологического исследования являются установление индивидуально-психологических особенностей личности потерпевшего, специфики его мотивационной, интеллектуальной и эмоциональной сфер, особенностей деятельности в ситуации данного правонарушения, а также иных психологических факторов, которые могут быть преморбидом для формирования зависимости от иной особы либо от определенных жизненных обстоятельств, которые могут создавать благоприятные условия для манипулирования сознанием и волевой деятельностью потерпевшего при принятии жизненно важного решения, ограничивая регуляцию его деятельности. Результатом психологического исследования является установление степени осознанной деятельности потерпевшего, имеющей (либо не имеющей) все необходимые признаки сложного волевого поведения. С учетом актуальности данной тематики и ростом запросов судебно-следственных органов на проведение соответствующих психологических экспертиз в Полтавском отделении Харьковского НИИСЭ разрабатывается соответствующая экспертная методика психологического исследования.

Ключевые слова: торговля людьми, экспертная практика, личность, деятельность, волевой акт, психологическая уязвимость, психологическая зависимость, экспертная методика.

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MEDICOLEGAL SUPPORT FOR MEDICAL MATTERS

Problematic issues of forensic medical support for the prosecution of health professional for professional crimes were considered. The need for organizational and legal regulation of the status of medical examiners and medical advisors involved in performing medical panel examinations during the investigation into "medical matters", is outlined.

Keywords: doctor professional crimes, legal medicine, medical examiner, medical advisor, status, legality, objectivity.

Result analysis of forensic panel examinations by the state agency Main Bureau of Forensic Medical Examination of the Ministry of Health of Ukraine regarding the faults of medical care provision demonstrated that for 2012–2014, specific weight of forensic medical examinations regarding "medical matters", increased from 19 to 23 % (as regards total number of examinations at forensic medical department of indicated institution), the number of revised conclusions of these examinations increased from 18 % in 2012 to 20 % in 2014.[1]

[1] Pletenetska A. O. (2016) *Analiz danykh komisiinykh ekspertyz DU «Holovne biuro sudovo-medychnoi ekspertyzy MOZ Ukrainy» shchodo defektiv nadannia medychnoi dopomohy. Suchasni*

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A similar tendency is observed in specific regions of Ukraine. For example, the analysis of medical panel examinations carried out by regional Khmelnytskyi Bureau of Forensic Medical Examination in cases regarding holding responsible of health professionals confirmed the general tendency: in 2009, specific weight of "medical matters", from the total number of forensic panel examination was 18 %, and in 2013 it reached 22 %. On average, the specific weight of "medical matters", for this five-year period was 22 %[1]. The authors of this research attribute this condition, on the one hand, to the introduction of market relations in medical practice, and on the other — to development of legal literacy of the population. In the 4th paragraph of their conclusions, they emphasize: "Cases of improper provision of medical help challenge before clinicians, lawyers and medical examiners a series of tasks that require a deep and comprehensive solution: studying the prevalence of inappropriate medical care provision, and taking measures to prevent offenses in medical practice".

O. M. Hurov and colleagues show that at the department of forensic panel examinations of the Kharkiv Regional Bureau of Forensic Medicine the number of examinations concerning professional offenses performed by health professionals increases with each passing year[2].

Such a negative dynamics requires careful study of the causes of these changes and the development of means for their elimination. Moreover, an important factor in the issues of forensic medical care support is the problem of identifying a causal link between actions (inactivity) of the medical professional and negative consequences for the patient (death, disability, etc.), as well as the differentiation of a conscientious medical error and offense (moral, civil law, disciplinary, administrative, criminal). This is partially

dosiahnennia v haluzi sudovoi medytsyny ta problemni pytannia pry provedenni sudovo-medychnykh ekspertyz u viddili komisiinykh ekspertyz ta u viddili ekspertyzy trupiv : zb. mater. mizhnarod. konf., m. Lviv, 2–3 chervnia 2016 r. [Forensic panel examination data analysis of Main Bureau of Forensic Medical Examination of the Ministry of Health of Ukraine regarding the faults of medical care provision. Modern achievements in the field of Forensic Medicine and problematic issues while performing forensic examinations at the department of forensic panel examinations and at the department of corps examination: Academic Conference Writing Collection Lviv, 2 — 3 June, 2016] Lviv, p. 68 [in Ukrainian].

[1] Shandyha-Hlushko O. I. Kozytska N. V. Kriazheva O. M. (2015) *Analiz komisiinykh sudovo-medychnykh ekspertyz, provedenykh u spravakh shchodo prytiahnennia do vidpovidalnosti medychnykh pratsivnykiv. Sudovo-medychna ekspertyza* [Analysis of commission forensic examinations carried out in cases involving the prosecution of health professionals. Forensic Medicine]. № 2. P. 95–100 [in Ukrainian].

[2] *Pravovi kolizii ta metodolohichni zasady sudovo-medychnoi ekspertyzy z pryvodu profesiinykh pravoporushen medychnykh pratsivnykiv/O. M. Hurov [ta in.]. Suchasni dosiahnennia v haluzi sudovoi medytsyny ta problemni pytannia pry provedenni sudovo-medychnykh ekspertyz u viddili komisiinykh ekspertyz ta u viddili ekspertyzy trupiv : zb. mater. mizhnarod. konf.* [Legal collisions and methodological principles of Forensic Medicine regarding offenses performed by health professionals O. M. Hurov and others. O. M. Hurov [and others.]. Modern achievements in the field of Forensic Medicine and problematic issues while performing forensic examinations at the department of forensic panel examinations and at the department of corps examination: Academic Conference Writing Collection Lviv], 2 — 3 June, 2016 Lviv, 2016. P. 225 [in Ukrainian].

referred to articles by E. P. Babkina and O. F. Loseva emphasizes that Forensic Medicine while investigating cases of professional offences committed by medical professionals is one of the most complex types of Forensic Science[1].

Coherence of article issues to important scientific and practical tasks is substantiated by the relevant requirements of the Laws of Ukraine *On Forensic Examination*, *Fundamentals of the Ukrainian Legislation on Health Care*, the *Civil and Criminal Procedure Codes of Ukraine*, resolutions of the Plenum of the Supreme Court of Ukraine, and departmental subordinate acts.

Problematic issues of organizing and performing forensic medical examinations while investigation into crimes committed by medical professional are constantly in the spotlight of forensic examiners and forensic authorities of Ukraine. This is evidenced by the annual publications on this issue on the pages of medical and legal publications. In particular, on June 2–3, 2016 in Lviv the international academic conference Modern achievements in the field of Forensic Medicine and problematic issues while performing forensic medical examinations in the department of forensic panel examinations and in the department of corps examination was held.

The analysis of recent research and publications shows a wide range of issues of proper organization and conducting of forensic examinations in the investigation of professional crimes of medical workers to ensure the requirements of Art. 3 of the Law of Ukraine *On Judicial Expertise*: Forensic-expert activity is carried out on the principles of legality, independence, objectivity and completeness of research.

Thus, M. Hurov and his co-authors (2016) report that in the United States in 2012, payments were made over 3 billion dollars. reimbursement in favor of patients. The main criterion for determining the fault in the provision of medical care was a deviation from the of Medical Care Standard. The authors are advocates of civil law innovations in some countries for the investigation into professional offenses committed by medical professionals. An economic mechanism that determines medical care provision in most developed countries is insurance companies, which in the controversial cases involve independent experts. In New Zealand, Scandinavian countries have established specialized courts for peer reviewing complaints about the quality of medical care. Specialized judges make decisions with the help of independent experts as witnesses, with the application of strict standards for the determination of compensations and penalties[2].

[1] Babkyna E. P. Loseva O. F. (2011) *Sudebnaia medytsyna: professyonalnie pravonarushenyia medytsynskykh rabotnykov y ykh sudebno-medytsynskaia otsenka. Ukrainskyi visnyk psykhonevrolohii* [Forensic Medicine: professional offenses of medical professionals and their forensic medical assessment. Ukrainian Journal of Psychoneurology]. V. 19. Issue 2(67). P. 233–235.

[2] Hurov O. M [and others.] Papers mentioned above, p. 224–225 [in Ukrainian].

It is necessary to agree with the authors' opinion that the performing normative regulation of forensic examinations regarding the cases of offenses committed by medical professionals concerns only the place of their performing, number of forensic scientists, the availability of medical and forensic medical documents, as well as the conclusions of the departmental investigation committee. In most manuals for lawyers and forensic examiners, the recommendations on "medical errors", do not contain meaningful comments on performing peculiarities of forensic examinations[1].

Lawyers, according to the same authors, consider responsibility for Art. 139 of the Criminal Code of Ukraine in "various circumstances", and address to solve the relationship between a doctor and a patient through insurance structures. Forensic evaluation in this case is subject only to "superficial, formal examination of a sick person.", and further: "professional medical-legal assessment of the sincere desire of doctors to observe "interests of professional activity", is destroyed through unified standards, standards and protocols[2]. We do not agree with this thesis.

We agree with the main conclusion of O. M. Hurov and his co-authors Hurov and co-authors emphases hat forensic medical examinations regarding "medical mattes", require the increase of legal medicine importance as a source of evidence, and the responsible impartial attitude of forensic scientist, experts and consultants work, especially administrators (managers) of the healthcare industry[3]. But we consider considering in detail the location regarding the status of medical examiner and medical advisers as fundamental principle.

Processing of modern legal literature regarding "medical matters", demonstrated some lawyers interest to. Thus, M. V. Kapustin studied the role of a medical professional person in the mechanism of an iatrogenic crime. Unfortunately, its calculations concerned only the medical professional as a subject of professional crimes (features of higher, secondary and lower levels of professional training of health professional, their rights and responsibilities are highlighted; 2 groups of specialized qualities of medical professional are identified — individual and professional groups with a list of signs of these qualities), subjective (active participation of a medical professional) and objective (deviation or unlawful application of standards and technologies of diagnosis and treatment) sides of crime and is by no means of health professional possible status as a Forensic Science or as a consultant while such crime investigation[4].

[1] Ibidem, p. 226.
[2] Ibidem, p. 227.
[3] Ibidem, p. 227.
[4] Kapustina M. V. (2013) *Osoba medychnoho pratsivnyka v mekhanizmi yatrohennoho zlochynu. Teoriia ta praktyka sudovoi ekspertyzy i kryminalistyky* [The role of a medical professional person in the mechanism of an iatrogenic crime. Theory and Practice of Forensic Science and Criminalistics] Issue 13. P. 136–144 [in Ukrainian].

However, there are still no careful study and resolution of previously unresolved problem areas of the general issues of legal medical investigation support of health professional crimes: the status of medical examiner and medical adviser (rights, responsibilities, responsibilities), limits of legal relations between a physician offender and the injured person, consideration of special medical issues by medical advisers without proper qualification, volume and depth of compulsory medical and accompanying research documentation, application of standards and protocols for medical care provision, photocopying of medical documentation.

The purpose of this article is to identify and substantiate ways to overcome the problem of legal and forensic medical locations while organizing and performing and medical penal examinations for "medical matters".

According to current criminal and procedural legislation of Ukraine while investigation into professional crimes of medical and pharmaceutical professional, the mandatory stage is performing of medical panel examinations. Forensic Medicine practice demonstrates that such examination is primary, additional, repeated, sometimes — a comprehensive commission. Procedure of performing medical panel examinations for "medical matters", is detailed in the order of the Ministry of Healthcare of Ukraine on the development and improvement of the Forensic Medical Service of Ukraine dated January 17, 1995 # 6 (hereinafter referred to as the Order of the Ministry of Healthcare of Ukraine # 6). However, this document did not adequately elaborate the Institute of Expert Physicians and the Institute of Doctors-Consultants with a detailed definition of their status, rights, responsibilities, and legal responsibility. Such gaps adversely affect the implementation of the principles of forensic science activity (Article 3 of the Law of Ukraine On Forensic Examination) and may lead to recognition of forensic scientist opinions as inadmissible and/or insignificant evidence for the above-mentioned reasons.

Problematic legal locations that generate uncertainty and contradictory actions of organizers and members of the medical penal examinations regarding "medical matters", begin with the preparatory stages of these examinations.

Most of forensic examinations on "medical matters", require in-patient or out-patient checkup of injured party (or the autopsy of an exhumed corpse, sending to laboratory for research, etc., according to the 18.2 clause of Rules for conducting medical penal examinations in a Bureau of forensic examinations, approved by the order of Ministry of Healthcare of Ukraine # 6, hereinafter — Rules) before the beginning of the committee meeting. This important stage (necessity and possibility of its venue, engaged staff, etc.) valid documents do not force a forensic scientist to coordinate with the

investigator. This is a of interest source conflict, corruption, professional crimes.

Whether there is a right, obligation, possibility or necessity for members (one of the members) to communicate with doctor-culprit, his subordinates (UAP, nurse) and the heads (head of the department, chief physician, etc.) to get acquainted with their explanations, interrogations, decryption of records and signatures in the medical documentation, presence of interested persons while the committee, provision of additional materials and explanations? Does this always require an investigator's permission? Where is this indicated? What is the responsibility of the committee members for such actions (or one of these actions)?

Medical examiner involvement system for medical for forensic medical examinations regarding "medical matters", as a legal institute is prescribed superficially and incompletely:

— the status of the medical examiner is partially determined:

a) forensic science activity related to performing forensic, criminalistic and forensic mental state examination is carried out exclusively by specialized state agencies (clause 2 of Art. 7 of the Law of Ukraine *On Forensic Examination*), and a medical examiner does not work there;

b) medical examiners are not certified and not introduced in the State Register of Certified Forensic Scientists, which administration entrusted to the Ministry of Justice of Ukraine; therefore investigators, judges do not have the right to consent to their inclusion to medical penal examinations regarding "medical matters", because they will not fulfill the requirements of the Part 2 of Art. 9 of the Law of Ukraine On Forensic Examination (The person or body that has appointed a forensic examination can entrust its execution to the forensic scientists introduced to the State Register of Certified Forensic Scientists and in cases described in the Part 4 of the 7 Article of this Law, to others experts from the relevant branches of knowledge);

– the agreement of the investigator or investigating judge on the involvement of an medical examiner is in many cases absent (reference is made to paragraph 4 of clause 1.5 of the Instructions on performing forensic examination and the clause 6.2 of the Rules — without additional agreement with the person who appointed a forensic examination, to participation in performing forensic examinations as scientists professors and teachers of departments of forensic medicine, specialists of health facilities and other departments)can be involved, but such coordination is mandatory (Article 243 of the CPC of Ukraine).

The system of medical adviser involving has practically not been processed as a legal institution by current legislation, and the existing provisions are contradictory. Even the definition of this concept is missing.

This, in particular, often violates paragraph 2.10 of the Instructions on performing forensic examinations on the mandatory approval of the

involvement of an expert with a person who appointed an examination ("While performing forensic examinations where was a need to resolve specific issues that are not within the competence of medical examiner, and there is a need an expert consultation in the appropriate medical field, or, if necessary, to perform an examination of a person subject to forensic examination in case of a need of professional physician working in another healthcare institution. Forensic medical examiner, in agreement with the person who appointed a forensic medical examination has the right to involve this expert for performing all necessary researches, to resolve issues raised face of examination "), approved by the order of the Ministry of Healthcare № 6. The Rules do not mention this requirement at all.

There is practically no legal system for verifying the specificity of the profession panel examination and qualification level of expert medical examiners and medical adviser. It is only indirectly referenced in clause 2.6 of the Instruction on performing forensic examinations that personal staff of the forensic scientists performing an examination is determined by the person who appointed the forensic examination or the head of the Bureau Forensic Medical Examination if there is no appointment of forensic scientist staff in the document. But the head of the Bureau does not have certificates of Neurosurgery, Gastroenterology, etc. He has only a certificate on Legal Medicine and is only expert in this field.

The procedure for and the form of their participation in the forensic medical examination for "medical cases", are not prescribed for doctors and medical consultants, which violates the principles of objectivity and completeness of the investigation of forensic expert activity (Who and how determines the amount of information, What information is provided to the commission (to familiarize them with all materials of the case, or only with medical documentation? The review is made by a committee member or a third-party expert? What status of the expert advisory opinion in the committee assignment of follow-up examination, which is not approved by legal acts)?

According to the current CPC of Ukraine, the court can interrogate forensic scientists and/or appoint a forensic examination during case hearing. In the case of studying in court of panel examinations, is forensic examiner who was the rapporteur for the commission is called for the explanation. He/she confirms and clarifies the conclusions of the expert committee in court. But he has a certificate only on a legal medicine, and not on other medical specialties (therapy, surgery, obstetrics, etc.). Interpretation by the medical expert of ophthalmologic or other conclusions is not within its competence! Therefore, all committee members should be called at the same time.

A number of questions relate to the documentation study by the expert committee. In the Paragraph 7 of the Rules stipulates that examination may be carried out only if the person who appointed the expert examination all the

necessary materials for the case. Their composition should include materials from criminal or civil cases and originals of medical, including primary, expert documentation.

And for what period medical documentation is being studied — 1, 5, 10, 50 years, from the moment of birth? This question is solved subjectively by the committee. For a newborn child, this is a medical record, a birth story and a pregnancy monitoring card. But for an adult at the age of 50, the birth story is crucial, where is getting of a severe craniocerebral injury with subsequent disability.

Extremely rarely, the expert committee studies the documents that may significantly affect the health of the person (obviously or latently) and distort the picture of the "medical matter", towards the unfair accusation or vice versa. These are living conditions, occupational health and safety risk, harmful or difficult working conditions, participation in combat operations, in elimination of industrial or natural disasters, environmental risks, etc.

The expert committee on "medical matters", does not consider the cornerstone of the comparison of provided medical care with the current standards and protocols for medical care provision, approved by the Ministry of Healthcare of Ukraine. Guided by the thoughts and assumptions of medical examiners about possible complexity of identifying a disease, its masking for another illness and causal relationship with is a false way. The physician should diagnose and treat according to the rules having a stamp of the Ministry of Healthcare of Ukraine, its departments, orders from the Healthcare departments and the head physician. No unofficial method (in particular, based on the results of these, scientific researches, experiments, etc.), diagnostics and treatment should not be! These approaches should be monitored and evaluated by an investigator.

In recent years, the practice of medical document photocopying provided by the investigator has become widespread, instead of studying it and reprinting it in the expert conclusion. We consider this a false practice. According to Articles 1 and 3 of the Law of Ukraine *On Forensic Examination*, a medical examiner should personally and fully investigate an object, phenomenon or process. Moreover, such actions of expert committee are a disregard of the requirements of paragraph 24 of the Rules, which states that when performing an examination on the prosecution of medical staff for criminal responsibility for "professional offenses", the details of all existing medical documents should be detailed in the protocol part. At the same time, depending on the nature of the case, the history of the disease must be written down: the state of the patient when it arrives to the hospital, records of diaries recording his state during entire period of treatment, protocols of operations, clinical diagnoses, schemes of prescribed medicated therapy, scoop and multiplicity of drug administration, results of laboratory tests, nature and extent of life support measures, autopsy data with histological examination

results or data on primary forensic medical examination, results of clinical-anatomical conferences with a review of medical records and conclusions of the departmental committee investigation.

When a of expert committee makes medical documentation photocopies, but does not read all the material, there are undecrypted abbreviation, indiscriminate handwriting, professional terms, links to many pages, etc. Such "innovation", distorts the results of research process by an expert in medical documentation and generates partiality, incompleteness, false conclusions, groundless accusation or justification.

Conclusions and suggestions:

1. For the prevention of corruption and pseudo cooperativeness while performing medical panel examinations, oblige regional level healthcare departments to create lists of medical examiners and advisers for all medical professions (two persons per each profession) and agree on them with the appellate court, regional prosecutor's office, police, security services, anti-corruption authorities. Update such lists once every 3 years.

2. Propose to the Main Bureau of Forensic Medicine of Ukraine:

— to ensure validity, completeness and evidence of medical panel commissions, to make compulsory the compilation of a comparative table during the consideration of "medical matters", between the complex of medical care performed by the accused physician and standards, protocols, methodological recommendations, etc., the provision of medical care, approved by the Ministry of Healthcare of Ukraine;

— to use during medical panel examinations the "blind", examination of patients undergoing "medical matters", for the prevention of pseudo cooperativeness in medicine;

— To submit proposals to the Ministry of Healthcare of Ukraine regarding appropriate changes to the order of the Ministry of Healthcare # 6, which does not correspond to the challenges of the present or to create a new order of the Ministry of Healthcare of Ukraine on forensic medical service.

3. Changing the current medical law of Ukraine to oblige the heads of medical institutions of any form of ownership (to prescribe disciplinary or administrative liability for non-fulfillment) upon request of the investigator, the court immediately to provide originals or documented photocopies of medical documents certified by chief physician with a full printed decoding of the entire text, abbreviations and specific terms by the medical staff who made the records. This eliminates the facts of making false or distorted information by medical professionals to the medical documentation.

4. To separate a forensic medical examination from the Ministry of Healthcare of Ukraine and other departmental expert services and to establish a State Agency for Forensic Examination under the Cabinet of Ministers of Ukraine. This will ensure objectivity and genuine independence of medical examiners from the influence of medical colleagues and others.

5. To recommend to judges, prosecutors, investigators to react on a regular basis with representations, requirements, instructions, etc.:

— violation of the Rules for performing medical panel forensic examinations and Instructions for performing medial forensic examinations, approved by the order of the Ministry of Healthcare on January 17, 1995 № 6, with the requirement from the head of the appropriate bureau of forensic medical examination to stop such violations and bring the perpetrators to disciplinary responsibility;

— improper and untimely registration of medical documents in medical institutions of any ownership, with the requirement of the head physician of the institution to stop such violations, and to bring the perpetrators to disciplinary responsibility.

6. In case of detection by the bodies of pre-trial investigation and courts violation of the principles of conducting forensic examinations, enshrined in Art. 3 of the Law of Ukraine *On Forensic Examination*, raise questions regarding the prosecution of forensic experts and expert doctors.

7. To propose to the subjects of legislative initiative to introduce disciplinary and administrative responsibility of medical staff, medical examiners, nontrading physicians and medical advisers for deliberate violation of the terms and rules of medical documentation registration at and relevant expert health care and forensic institutions of any type of ownership.

Prospects for further searches in the proposed direction (forensic medical support for "medical matters") include the legislative initiatives of the relevant actors, the legal elaboration of the institutes of medical examiners and advisers, improvement of the organizational, methodological and regulatory work of the forensic medical service and the Ministry of Healthcare of Ukraine.

СУДОВО-МЕДИЧНИЙ СУПРОВІД «ЛІКАРСЬКИХ СПРАВ»

В. В. Хижняк*, *В. О. Ольховський*, *А. О. Моргун*, *К. В. Куценко*, *О. О. Моргун

Розглянуто проблемні питання судово-медичного супроводу притягнення до кримінальної відповідальності медичних працівників за вчинені професійні злочини. Зроблено акцент на необхідності організаційно-правового врегулювання статусу лікарів-експертів і лікарів-консультантів, яких залучають у процес проведення комісійних судово-медичних експертиз під час розслідування «лікарських справ».

Ключові слова: професійні злочини лікарів, судово-медична експертиза, лікар-експерт, консультант, статус, законність, об'єктивність.

СУДЕБНО-МЕДИЦИНСКОЕ СОПРОВОЖДЕНИЕ «ВРАЧЕБНЫХ ДЕЛ»

В. В. Хижняк*, *В. А. Ольховский*, *А. А. Моргун*, *К. В. Куценко*, *Е. А. Моргун

Рассмотрены правовая неполнота и противоречия статуса врачей-экспертов и врачей-консультантов, которых практически всегда привлекают для проведения судебно-медицинских экспертиз по «врачебным делам». Показаны негативные последствия тотального ксерокопирования медицинской документации, которая предоставляется комиссии экспертов в ненадлежащем виде (неразборчивый

почерк, аббревиатуры, непонятные сокращения, суржик, подписи без указания фамилии и т. д.). Сделан акцент на выборочном использовании комиссиями экспертов по «врачебным делам» стандартов и протоколов предоставления медицинской помощи. Выявленные «проблемные поля» провоцируют элементы коррупции и «ложно понятые интересы службы» в среде медицинских работников (судебно-медицинских экспертов, врачей-экспертов, врачей-консультантов и врачей), которых привлекают к юридической ответственности за совершенные ими профессиональные правонарушения. Это негативно влияет на проведение и выводы комиссионных судебно-медицинских экспертиз по «врачебным делам». Причина «проблемных локаций» — неполная медико-правовая проработка статуса субъектов процесса осуществления комиссионных судебно-медицинских экспертиз — нечетко прописаны права, обязанности и ответственность этих субъектов. Для профилактики негативных элементов и действий при проведении судебно-медицинских экспертиз по «врачебным делам» необходимо: права, обязанности и ответственность врачей-экспертов и врачей-консультантов привести в соответствие с действующим законодательством Украины; комиссионные судебно-медицинские экспертизы по «врачебным делам» проводить исключительно по требованиям стандартов и протоколов предоставления медицинской помощи с внедрением элементов «слепого обследования» потерпевших; повысить требовательность (четкость и сроки оформления) к составлению медицинской и судебно-медицинской документации; усовершенствовать нормативно-правовую документацию, которая регулирует судебно-медицинскую деятельность; обсудить вопрос о создании государственного агентства судебных экспертиз при Кабинете Министров Украины с подчинением ему всех ведомственных экспертных служб.

Ключевые слова: профессиональные преступления врачей, судебно-медицинская экспертиза, врач-эксперт, консультант, статус, законность, объективность.

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CURRENT STATE AND PERSPECTIVES FOR DEVELOPMENT VETERINARY FORENSIC SCIENCE IN UKRAINE

Prospects of development of forensic veterinary science as areas of practical veterinary and legal activity, science and educational discipline in Ukraine are demonstrated. The object, the range of objects, the list of issues that are solved while forensic examination during offenses investigation of are determined. Some aspects of use of special veterinary knowledge in forensic activity are considered. Prospective scientific directions of forensic veterinary research are indicated.

Keywords: forensic veterinary, prospects of development.

> In one branch of agriculture there is no such number of fools, deceit and fraud, as in animal husbandry.
> F. T. Popov (1895).

During the years of Ukraine independence, judicial expertise has become one of the priorities of protecting the rights and freedoms of citizens. It provides justice with independent, impartial, skilled and objective information geared towards maximizing the use of science and technology achievements.

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It is known that the violation of veterinary rules is the cause of the emergence of diseases of animals of contagious etiology, which cause damage to livestock. Unsatisfactory conditions of keeping and feeding animals contribute to their increased withdrawal. Violation of the conditions for quarantine, the sale and purchase of animals, the misuse of their use for breeding and other purposes, poaching, cruelty to animals, as well as violations of the rules for the disposal of dead animals lead to litigation, for consideration of which for a comprehensive, objective, directly right solution problems arise the need for the application of special (veterinary) knowledge in the field of veterinary medicine.

The most widespread form of their application in the legal proceedings is forensic veterinary expertise. It should be considered as a science, a discipline, a field of practical veterinary and legal activity[1]. It is also a procedural act whose purpose is to conduct a study of objects provided by a competent authority with a veterinary medicine physician (forensic expert) using special (veterinary) knowledge for the establishment of factual data, the results of which are reflected in the expert's conclusion, which is relevant for investigation of criminal, civil, economic cases[2].

The subject of forensic veterinary forensic science are factual data (facts, circumstances) which are established on the basis of special (veterinary) knowledge.

The objects of forensic veterinary expertise include:

1) live animals: domestic, wild, hunting, zoo (exotic);

2) corpses of animals (anatomically whole, fragmentary, skeletonized);

3) raw materials for the veterinary and biological industry (endocrine, enzymatic);

4) animal feed, feed additives;

5) products of animal origin;

6) veterinary pharmaceuticals and poisons;

7) Objects — Real Evidence: pesticides, rope, vomit masses, traces of blood, sweats, etc..; derivatives of the skin of animal origin (hair, feathers, scales, etc.); pieces of fur and skins;

documents: materials of pre-trial and judicial cases (protocols of autopsies, acts of epizootic inspection of the economy, log of registration and treatment of sick animals, journal of issuing veterinary documents, manufacturer's declaration, operating permit, etc.).

[1] *Sudova veterynarna medytsyna — nauka i navchalna dystsyplina: istoriia, suchasnyi stan problemy, perspektyvy / I. V. Yatsenko, A. M. Trush, H. I. Kotsiumbas ta in. Problemy zooinzhenerii ta veterynarnoi medytsyny : zb. nauk. prats Kharkiv. derzh. zooveterynar. akademii* [Forensic veterinary — science and educational discipline: history, current state of the problem, perspectives / I. V. Iatsenko, A. M. Trush, H. I. Kotsiumbas and others. Problems of zoinengineering and veterinary: Scientific paper collection of Kharkiv State Veterinary Academy]. Kharkiv : RVV KhDZVA, 2008. Issue 17. 19, p. 2,v. 2. P. 325–343 [in Ukrainian].

[2] Ibidem.

Forensic veterinary expertise solves the issue during the investigation of offenses concerning:

— production, circulation, sale, storage of products of animal origin;

— determination of the state of health and degree of bodily harm of animals;

— forensic veterinary study of animal corpses, establishment of violent death;

— ill-treatment of animals;

— evaluation of timeliness and completeness of carrying out of medical-preventive, antiepizootic, sanitary-hygienic, quarantine and other measures;

— research on cases of medical errors of experts in veterinary medicine;

— conducting researches in cases concerning the resolution of controversial economic issues in the areas of livestock technology and veterinary medicine;

— research of veterinary documents.

This listing is not exhaustive.

Forensic veterinary expertise is currently being actively developed in Ukraine as a veterinary medicine, law branch, independent science and educational discipline. Professor G. I. Kotsyubas is a member of the Lviv National University of Veterinary Medicine and Biotechnology. S. Z. Gzhytsky, professor Skrypka M. V. — in the Odessa State Agrarian University, professor Zon G. A. — in the Sumy National Agrarian University, assistant professor Serdyukov Ya. K. at the National University of Life and Environmental Sciences (Kyiv). In the Kharkiv State Veterinary Academy it was developed by scientists from the XIX century: associate professors Petrov F. T., Obraztsov V. P.[1], Trush A. M.[2] Yatsenko I. V., Golovko N. P., Vasily Petrovich Obraztsov: veterinary and forensic veterinary expert (bibliographic essay).

Recently, the Kharkiv State Veterinary Academy organized a department of veterinary and sanitary expertise and judicial veterinary medicine, protected 1 doctoral and 3 candidate dissertations, the basis of which was the concept of judicial and veterinary expertise as a science. During this time, declarative patents have been obtained for a useful model for methods of determining the species, age and sex of animals by individual parts of their body[3], as well as improved classical and developed new ways of detecting

[1] Problems of zoinengineering and veterinary: Scientific paper collection of Kharkiv State Veterinary Academy. Kharkiv : RVV KhDZVA, 2014. Issue 17. 28, p. 15–19 [in Ukrainian].

[2] Tsymbal M. L. Trush A. M. Savenko M. M. (2002) *Perspektyvy stanovlennia sudovoi ekspertyzy veterynarnoi medytsyny v Ukraini. Teoriia ta praktyka sudovoi ekspertyzy i kryminalistyky : zb. mater. mizhnar. nauk.-prakt. konf.* [Prospects for establishing a forensic examination of veterinary medicine in Ukraine. Theory and Practice of Forensic Science and Criminalistics: Content of International Academic Conference]. Kharkiv : Pravo, p. 564–569 [in Ukrainian].

[3] *Deklaratsiinyi patent Ukrainy na korysnu model № 99469 Sposib vyznachennia viku ta stati velykoi rohatoi khudoby za osteometrychnymy parametramy nosomozkovoho viddilu cherepa*

non-recipe ingredients and properties of food products of animal origin[1]. In 2017 the postgraduate study for the first time was opened on the field of specialization: 211, *Veterinary Medicine*, specialization: *Trial veterinary medicine*.

On the basis of performed scientific researches, computer programs[2] have been developed which automate the process of expert research and are now actively used in practice.

Our theoretical achievements and practical developments are the educational and scientific base for the students of OR "Bachelor", and "Master", postgraduate students, doctoral students, scientific and pedagogical workers of higher educational institutions of Ukraine, specialists in postgraduate education.

Published scientific articles in professional editions of Ukraine and foreign countries, monographs[3], scientific-methodical and scientific-practical recommendations[4] for practicing specialists were prepared and published, as well as teaching aids, in particular: *Organizational and procedural bases of forensic examination in Ukraine* (2015), *Practice of Forensic Veterinary Expertise* (2014), *Forensic Veterinary Expertise in Asphyxia* (2016), *Forensic examination of damages arising action on the organism of animals of pathogenic physical factor*s "(2015), *Forensic Veterinary and Anatomy* (2017) and others.

In 2014, the Kharkiv State Animal Veterinary Academy opened for the first time in Ukraine the Bureau of Forensic Veterinary Research for the implementation of the practical functions of forensic veterinary expertise — assisting law enforcement agencies in investigating their offenses[5]. The

[Declarative Patent of Ukraine for Utility Model № 99469 Method for determining the age and sex of cattle according to osteometric parameters of the cranial nerve]. K. R. S. Abuznaid, I. V. Iatsenko, O. M. Hetmanets; stated 24.11.2014; published on 06/10/2015, Bulletin № 11. 4 p. [in Ukrainian].

[1] *Deklaratsiinyi patent Ukrainy na korysnu model № 99469. Sposib vyznachennia falsyfikatsii m'iasnoho farshu krokhmalem ta boroshnom* [Ukraine Declarative Patent for useful model № 99469. Method of determining the falsification of minced meat by starch and flour] N. M. Bohatko, N. V. Bukalova, A. F. Bohatko, I. V. Iatsenko, Ya. K. Serdiukov. Application № u201500315 dated on: 16.01.2015 [in Ukrainian].

[2] Hetmanets O. M. Yatsenko Y. V. *Ynformatsyonnыe tekhnolohyy v veterynarnoi osteolohycheskoi эkspertyze: materyalы XII mezhdunar. nauch.-prakt. konf.* [Information technology in veterinary osteology examination: Content of XII International Academic Conference] (May 19–23, 2008). Belgorod, p. 118 [in Russian].

[3] Yatsenko I. V. Havrylin P. M. Bondarevskyi M. M. (2012) *Sudovo-veterynarne znachennia strukturnykh parametriv skeleta ssavtsiv dlia vyznachennia vydovoi nalezhnosti biolohichnoho materialu: monohrafiia* [Forensic and Veterinary Value of Structural Parameters of the Mammal Skeleton to Determine the Specific Species of a Biological Material : Monograph]. Kharkiv : Stil-Izdat, 303 p. [in Ukrainian].

[4] Yatsenko I. V. Havrylin P. M. (2008) *Vstanovlennia vydovoi nalezhnosti dribnykh tvaryn porivnialno-anatomichnym metodom z vykorystanniam komp'iuternoi prohramy «Osteo» u veterynarno-sanitarnii i sudovo-biolohichnii ekspertyzi.* [Establishing the species belonging to small animals by comparative anatomical method using the computer program "Osteo", in the veterinary and sanitary and forensic biological science]. Kharkiv : RVV KhDZVA, 57 p. [in Ukrainian].

[5] Yatsenko I. V. Dehtiarov M. O. Bondarevskyi M. M. Trush A. M. (2014) *Kharkivska shkola vydatnykh diiachiv veterynarno-sanitarnoi ta sudovo-veterynarnoi ekspertyzy. Problemy*

Bureau conducts expert examinations on criminal, civil and commercial matters.

The experts tested theoretical developments during the investigation of materials of criminal proceedings on the grounds of crimes provided for in the relevant articles of the Criminal Code of Ukraine, in particular: violations of veterinary rules (Article 251 of the Criminal Code of Ukraine), fraud (Article 190 of the Criminal Code of Ukraine), official forgery (part 1 (Article 191 of the Criminal Code of Ukraine), the illegal use of the mark for goods and services (Article 229 of the Criminal Code of Ukraine), ill-treatment of animals (Article 299 of the Criminal Code of Ukraine), the abolition of property no), illegal hunting (Article 248 of the Criminal Code of Ukraine) and others.

Forensic veterinary examinations were carried out on veterinary medicine objects, and, consequently, they are relevant both from a theoretical point of view and for practical use, in particular[1]:

— Forensic and veterinary examination of cows with signs of mechanical damage by a blunt object (the shepherd inflicted damage to the cow with a stick. Our task was to establish a causal relationship between trauma and loss of cow's milk productivity).

— death of sheep in the Izyum district of the Kharkiv region (it was necessary to establish a causal relationship between the death of sheep and their de-worming with copper sulphate);

— the death of the turkeys in the Shakhtar Agricultural Company in region (the task was to establish a causal link between the bird's death and the safety of the feed it consumed);

— mass death of bees in farms in the Verkhnyodniprovsky district of the Dnipropetrovsk region (it was necessary to establish a causal relationship between the treatment of rape with agrochemicals and the death of bees);

— deadly gunshot wounds[2] (the task of the examination was to determine the nature of the damage).

One of the objects of the forensic examination, which was in the field of our view, is illegal hunting (poaching): on elks, wild boars, goybeans, etc. (the task of the examination was to determine the species belonging to the carcass of animals, the nature of the damage found in the body). The study of

zooinzhenerii ta veterynarnoi medytsyny : zb. nauk. prats Kharkiv. derzh. zooveterynar. akademii. [Kharkiv School of Prominent Veterinary and Sanitary and Forensic Veterinary Expertise. Problems of zoinengineering and veterinary: Scientific paper collection of Kharkiv State Veterinary Academy]. Kharkiv : RVV KhDZVA, Issue 17. 28, p. 20–28 [in Ukrainian].

[1] Yatsenko I. B. Trush A. M. (2014) *Praktyka sudovo-veterynarnoi ekspertyzy: khrestomatiia* [The practice of forensic veterinary expertise: chrestomathy]. Kharkiv : Stil-Izdat, 314 p. [in Ukrainian].

[2] *Sudovo-veterynarna ekspertyza ta otsinochni kryterii smertelnykh vohnepalnykh poranen tvaryn (iz ekspertnoi praktyky)* (2015) [Forensic veterinary expertise and evaluation criteria for deadly animal wounds (from expert practice)] / I. V. Iatsenko, A. V. Zakhariev, Ya. K. Serdiukov and others. Problems of zoinengineering and veterinary: Scientific paper collection of Kharkiv State Veterinary Academy. Kharkiv : RVV KhDZVA, Issue 17. 30, p. 325–346 [in Ukrainian].

individual parts of the body of animals (skeletal bones, hair, fragmentary and burned animal remains) allowed the development of methods for determining their species belonging, as well as age and sex of animals[1].

Recently, forensic veterinary examinations concerning the violation of veterinary rules provided for in art. 251 of the Criminal Code of Ukraine, for example the emergence and distribution of acutely occurring epizootics of African swine fever, in particular in the Dergachi district of the Kharkiv region and in the Novohoradsky district of the Mykolaiv region. The task of the forensic examination on such categories of cases is to establish the correctness, completeness and adequacy of the actions of officials of veterinary medicine to prevent the onset of the disease, as well as the timeliness and compliance of the organization of veterinary and sanitary measures for its elimination, the requirements of the Instructions for the prevention and control of African swine fever[2].

Of particular concern today is the issue of ill-treatment of animals. However, lately, mistreatment of animals is not a mere fact. Such an offense is provided for in the Code of Ukraine on Administrative Offenses (Article 89) and the Criminal Code of Ukraine (Article 299). Verkhovna Rada of Ukraine in 2017 increased the responsibility for such offenses, because their object is the morality of society[3]. According to the court decisions and the decisions of the investigators, forensic examinations of the objects of such offenses concerning the death of animals for thermal damage, from damages to dull and sharp objects were carried out.

Actual, as well as ill-founded and developed questions is the forensic and veterinary study of live animals. However, the issue of forensic medical education of people is quite clearly regulated, highlighted in the pages of dissertations and scientific publications. The task of an expert in such cases is to establish the nature and degree of gravity of bodily injuries.

Nowadays there are questions regarding the forensic examination of animals or their corpses, in particular, homeless dogs and cats for poisoning them with anti-TB and other means (isoniazid, tubasidum, rifampicin, etc.) in order to reduce their number. Forensic veterinary expertise in these circumstances is intended to establish a cause-and-effect relationship between

[1] Yatsenko I. V. (2009) *Strukturni parametry skeleta ssavtsiv yak ob'iekty sudovo-veterynarnoi ekspertyzy pry vyznachenni vydovoi nalezhnosti biolohichnoho material : dys. ... d-ra veterynarnykh nauk* [Structural parameters of mammalian skeleton as objects of forensic veterinary expertise in determining the species composition of biological material : Doctoral dissertation]. 16.00.02 Pathology, oncology and morphology of animals, 587 p. [in Ukrainian].

[2] *Pro zatverdzhennia Instruktsii z profilaktyky ta borotby z afrykanskoiu chumoiu svynei: nakaz Ministerstva ahrarnoi polityky ta prodovolstva Ukrainy* [On Approval of the Guidelines for the Prevention and Control of African Swine Fever: the order of the Ministry of Education and Science of Ukraine] dated on 07.03.2017 № 111. URL: http://zakon3.rada.gov.ua/laws/show/z0432–17 [in Ukrainian].

[3] *Pro vnesennia zmin do deiakykh zakonodavchykh aktiv Ukrainy shchodo zaprovadzhennia humannoho stavlennia do tvaryn : Zakon Ukrainy* [On Amendments to Certain Legislative Acts of Ukraine on the Introduction of Humane Approach to Animals : Law of Ukraine] dated on: 22.06.2017 № 2120–VIII. Bulletin of Verkhovna Rada of Ukraine. 2017. № 34. Art. 371 [in Ukrainian].

the poison detected in the animal's body and clinical signs during the course of poisoning, as well as pathoanatomical changes detected in the body of the animal.

The development of issues for decision by the judicial-veterinary expertise is important because in the approved by the Ministry of Justice of Ukraine "Scientific and methodological recommendations for conducting forensic examinations and expert studies", there is practically no such list that could help the law enforcement officer to formulate questions that can be posed. expert, appointing a forensic veterinary examination regarding the study of any objects of veterinary medicine. On the basis of the conducted examinations and conclusions, we have developed the content of such issues, as well as the algorithms of individual forensic studies.

Thus, based on the sources of literature, own researches and the facts set forth by perspective scientific directions of researches in the field of forensic veterinary expertise are:

1) development of methods of conducting forensic examination or studying of live animals (for evaluation of the severity of injuries, degree of their health disorder, loss of productivity, timeliness and completeness of medical and prophylactic, antiepizootic, sanitary-hygienic, quarantine and other measures);

2) development of methods for conducting forensic examination of animal corpses (establishment of violent death as a result of fire-fighting, poisoning or other causal links or in the case of suspicion of the use of violence, ill-treatment of animals);

3) in the case of commercial disputes — the development of methods for assessing the timeliness and completeness of the activities provided for by the current veterinary legislation; carrying out complex commodity research of living animals; expert research in matters concerning the resolution of controversial economic issues in the field of livestock technology and veterinary;

4) the development of methods for the detection and analysis of medical errors that occurred during the care, treatment, prevention and exclusion of animals (timeliness and adequacy of the provision of veterinary care to the animal; the correctness of the actions of a specialist in veterinary medicine during medical and preventive measures);

5) improvement of classical and development of new methods of detecting falsifications of products of animal origin;

6) development of methods for the study of veterinary documents in order to establish their compliance with the current legislation of Ukraine;

7) development of normative documents on the stages of conducting forensic veterinary research.

СУЧАСНИЙ СТАН І ПЕРСПЕКТИВИ РОЗВИТКУ СУДОВО-ВЕТЕРИНАРНОЇ ЕКСПЕРТИЗИ В УКРАЇНІ

І. В. Яценко, С. І. Запара, А. В. Захар'єв

Показано перспективи розвитку судово-ветеринарної експертизи, як сфери практичної ветеринарної і юридичної діяльності, науки й навчальної дисципліни в Україні. Визначено предмет, коло об'єктів, перелік питань, які вирішуються цією експертизою під час розслідування правопорушень. Розглянуто деякі аспекти використання спеціальних ветеринарних знань в експертній діяльності. Зазначено перспективні наукові напрями судово-ветеринарних досліджень.

Ключові слова: судово-ветеринарна експертиза, перспективи розвитку.

СОВРЕМЕННОЕ СОСТОЯНИЕ И ПЕРСПЕКТИВЫ РАЗВИТИЯ СУДЕБНО-ВЕТЕРИНАРНОЙ ЭКСПЕРТИЗЫ В УКРАИНЕ

И. В. Яценко, С. И. Запара, А. В. Захарьев

Показаны перспективы развития судебно-ветеринарной экспертизы, как сферы практической ветеринарной и юридической деятельности, науки и учебной дисциплины в Украине. Определены предмет, круг объектов, перечень вопросов, которые решаются этой экспертизой при расследовании правонарушений. Рассмотрены некоторые аспекты использования специальных ветеринарных знаний в экспертной деятельности. Указаны перспективные научные направления судебно-ветеринарных исследований. Предметом судебно-ветеринарной экспертизы являются фактические данные (факты, обстоятельства), которые устанавливаются на основе специальных ветеринарных знаний. К объектам судебно-ветеринарной экспертизы относятся: 1) животные живые: домашние, дикие, охотничьи, зоопарковые (экзотические); 2) трупы животных (анатомически целые, фрагментарные, скелетонизированные); 3) сырье для ветеринарно-биологической промышленности (эндокринное, ферментное); 4) корма животного происхождения, кормовые добавки; 5) продукция животного происхождения; 6) ветеринарные фармацевтические препараты и яды; 7) объекты — вещественные доказательства: ядохимикаты, веревки, рвотные массы, следы крови, послед и т. п.; производные кожных покровов животного происхождения (волосы, перо, чешуя и т. п.); куски меха и шкуры; 8) документы: материалы досудебных и судебных дел (протоколы вскрытия, акты эпизоотического обследования хозяйства, журнал регистрации и лечения больных животных, журнал выдачи ветеринарных документов, декларация производителя, эксплуатационное разрешение и т. п.). Судебно-ветеринарная экспертиза решает вопросы при расследовании правонарушений относительно: производства, обращения, реализации, хранения продукции животного происхождения; определения состояния здоровья и степени телесных повреждений животных; судебно-ветеринарного исследования трупов животных, установления насильственной смерти; жестокого обращения с животными; оценки своевременности и полноты проведения лечебно-профилактических, противоэпизоотических, санитарно-гигиенических, карантинных и других мероприятий; исследования по делам о врачебных ошибках специалистов ветеринарной медицины; проведения исследований по делам, касающихся решения противоречивых хозяйственных вопросов в сферах технологии животноводства и ветеринарной медицины; исследования ветеринарных документов.

Ключевые слова: судебно-ветеринарная экспертиза, перспективы развития.

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COMPLEX EXPERT INVESTIGATION OF SOLUTIONS FOR ETHANOL BASED FLAKES

Recommended algorithm for research by an expert-solvent chemist for ethanol-based Flexography. The complex of attributes is sufficient for the expert-commodity scientist in determining the characteristics of the goods in accordance according to UCT ZED (Ukrainian classification of foreign economics goods). Necessity of using additional normative and technical documentation for complex chemical and commodity research is emphasized. The list of methods, the use of which allows for specific answers to the questions put to the decision of experts, include gas chromatography and IR spectrometry, as well as other physical and chemical methods: measurement of density, fractional composition, etc. The resulting set of features is sufficient to formulate the conclusion in a categorical form.

Keywords: solvent for Flexography, dehydrated ethanol, gas chromatography, IR spectrometry, complex expert research.

Complex expert investigations of spirit-containing mixtures, for solving which questions about establishing product characteristics for UKT ZED, are becoming increasingly important when using these mixtures as high-octane additives to automotive gasoline. However, this field of application is not unique,

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since ethanol is the basis of many mixtures, in particular solvent for Flexography. Differences in excise tax rates for mixtures of different types and destinations lead to disputes with the customs authorities when transporting these goods across the state border, as well as their production in the territory of Ukraine.

Consider the basic features of solvents for Flexography and their differences from mixtures of other purposes and similar composition[1].

1. Ethyl alcohol is a major component of these mixtures. Its quantitative content depends on the physical and chemical properties of the final solvent and in most cases exceeds 90 %.

2. Dehydration — the presence of moisture significantly degrades the properties of the solvent, and therefore its content is strictly controlled and set, as a rule, within a maximum of 0.2 %.

3. Availability of separate auxiliary components added to ethanol to control the volatility of the final mixture. One of the most common components are esters; mainly ethyl acetate.

4. The content of third-party high-boiling components is also regulated and set at a minimum level. Most often it is controlled by measuring the residue after evaporation of the weight of the solvent studied.

Flex mixes are among the many types of solvents that meet the characteristics of the Ukrainian Classifier of Goods for Foreign Economic Activity of the subheading 3814 00 90 19.

According to the data of 11/06/2018 (here and thereafter from the QDPro[2] software), the excise tax is not applicable to the goods of this subcategory (Figure 1).

Characteristics of goods of the specified subcategory:

Solvents and disintegrators are not complex, in other commodity positions are not specified; Ready to remove paints or varnishes:

— others:

— based on acetone, xylene, toluene, ethyl cresol, solvent, white spirit, ethanol:

— others.

However, there are a number of goods having the composition and characteristics close to the above, which differ significantly in the excise tax rate. These include, first of all, bioethanol and various additives to ethanol-based gasoline — anti-knockers. In Ukraine, there are state standards regulating the composition and properties of such mixtures, as well as their numerous analogues — technical specifications that are developed at enterprises and sometimes non-controllingly distributed in the field of circulation of petroleum products.

[1] Yarema S. M. (1998) *Fleksohrafiia: Obladnannia. Tekhnolohiia: navch. posibnyk* [Flexography: Equipment. Technology : tutorial]. Kyiv : Lybid, 312 p.

[2] *Poiasnennia do Ukrainskoi klasyfikatsii tovariv zovnishnoekonomichnoi diialnosti* [Explanation to the Ukrainian classification of goods in foreign economic activity] / Electronic resource / software QDPro — documents.

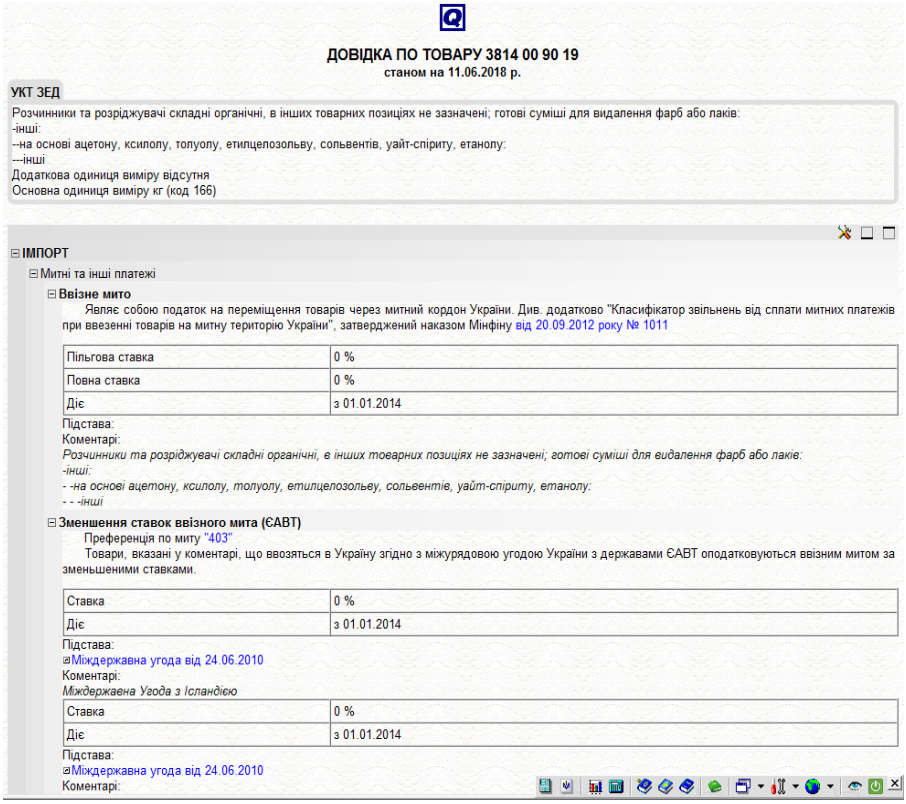


Fig. 1. Product Reference 3814 00 90 19 with QDPro

The standards that regulate the characteristics of bioethanol and mixtures thereof are the following: DSTU 7166: 2010 *Bioethanol. Specifications*, DSTU EN 15376: 2015 *Automobile fuel. Ethanol as a component of gasoline. Requirements and test methods*. It should be noted that in the current methods of expert investigation of petroleum products and their components, such as the issue of a comprehensive study of ethanol-based solvents and additives to ethanol-based fuels are not resolved.

In most cases, the mixtures used to be added to automotive gasoline are characterized by similar to the solvent for flexure parameters, namely:

— Dehydration. High moisture content in rectified alcohol and absorption of external moisture in alcohol-gas mixtures lead to their bundle, which makes it impossible to use the intended use;

— high content of ethanol — usually it is much more than 90 %;

— colorlessness.

However, ethanol mixtures for use as a component of gasoline are often characterized by such a distinctive feature as the content of gasoline (set at about 1.5 %), which is used as a denaturant. For the same purpose methyl-t-butyl ether (MTBE) and a number of other components, in particular fuel oils, can be used. The literature does not contain available and widespread information on the use of complex esters in motor gasoline, although they may also be present in bioethanol as a co-impurity. The presence of ester in a significant concentration can be considered as one of the hallmarks in solving the diagnostic and classification issues inherent in solvents for Flexography.

In the classification of ethanol-containing mixtures as a component of gasoline (fuel components on the basis of ethanol, bioethanol), the following characteristics are commonly used from the UCT ZED[1].

1. Bioethanol:

Ethyl alcohol, undenatured, with an alcohol concentration of 80 % by volume or more; ethyl alcohol and other alcohol distillates and alcoholic beverages obtained by distillation, denatured, at any concentration:

— Ethyl alcohol and other alcoholic distillates and alcoholic beverages obtained by distillation, denatured, at any concentration:

— bioethanol

commodity subcategory 2207 20 00 10.

The reference for the product of bioethanol is shown on Fig. 2

2. Antiknock agents (including ethanol-containing).

Antiknock agents, antioxidants, resin-forming ions, thickeners, anticorrosion preparations and other ready-made additives, additives for petroleum products (including gasoline) or for other liquids used for the same purpose as petroleum products:

— anti-knockers:

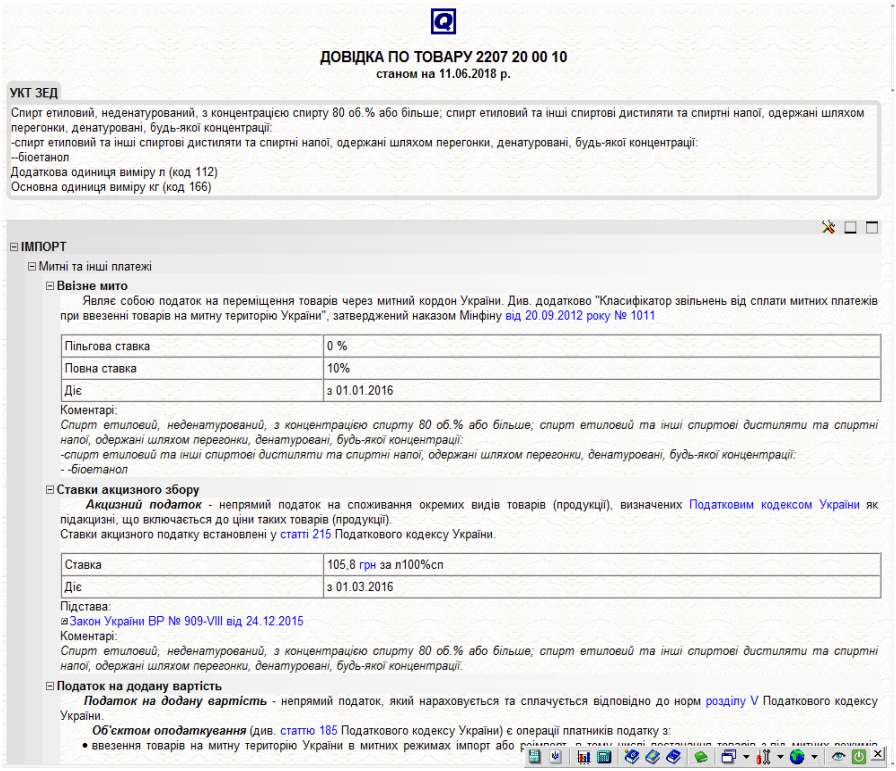
— others

commodity subcategory 3811 19 00 00

The reference for this product is shown in Fig. 3

Establishing the characteristics of UCT ZED in assigning solvents for Flexography to one or another subcategory allows you to determine the actual amount of damages when “masking”, anti-detonators in the form of solvents and to establish the actual data on the case when customs clearance of these goods, as well as their production within Ukraine.

[1] *Poiasnennia do Ukrainskoi klasyfikatsii tovariv zovnishnoekonomichnoi diialnosti* [Explanation to the Ukrainian classification of goods in foreign economic activity] Electronic resource / software QDPro — documents.



ДОВІДКА ПО ТОВАРУ 2207 20 00 10
станом на 11.06.2018 р.

УКТ ЗЕД

Спирт етиловий, неденатурований, з концентрацією спирту 80 об.% або більше; спирт етиловий та інші спиртові дистиляти та спиртні напої, одержані шляхом перегонки, денатуровані, будь-якої концентрації:
-спирт етиловий та інші спиртові дистиляти та спиртні напої, одержані шляхом перегонки, денатуровані, будь-якої концентрації:
--біоетанол
Додаткова одиниця виміру л (код 112)
Основна одиниця виміру кг (код 166)

ІМПОРТ

Митні та інші платежі

Ввізне мито

Являє собою податок на переміщення товарів через митний кордон України. Див. додатково "Класифікатор звільнень від сплати митних платежів при ввезенні товарів на митну територію України", затверджений наказом Мінфіну від 20.09.2012 року № 1011

Пільгова ставка	0 %
Повна ставка	10%
Діє	з 01.01.2016

Коментарі:
Спирт етиловий, неденатурований, з концентрацією спирту 80 об.% або більше; спирт етиловий та інші спиртові дистиляти та спиртні напої, одержані шляхом перегонки, денатуровані, будь-якої концентрації:
-спирт етиловий та інші спиртові дистиляти та спиртні напої, одержані шляхом перегонки, денатуровані, будь-якої концентрації:
- -біоетанол

Ставки акцизного збору

Акцизний податок - непрямий податок на споживання окремих видів товарів (продукції), визначених Податковим кодексом України як підакцизні, що включається до ціни таких товарів (продукції).
Ставки акцизного податку встановлені у статті 215 Податкового кодексу України.

Ставка	105,8 грн за л100%сп
Діє	з 01.03.2016

Підстава:
Закон України ВР № 909-VIII від 24.12.2015
Коментарі:
Спирт етиловий, неденатурований, з концентрацією спирту 80 об.% або більше; спирт етиловий та інші спиртові дистиляти та спиртні напої, одержані шляхом перегонки, денатуровані, будь-якої концентрації.

Податок на додану вартість

Податок на додану вартість - непрямий податок, який нараховується та сплачується відповідно до норм розділу V Податкового кодексу України.

Об'єктом оподаткування (див. статтю 185 Податкового кодексу України) є операції платників податку з:

- ввезення товарів на митну територію України в митних режимах імпорт або

Fig. 2. Reference for the product bioethanol

We propose the following algorithm for complex chemical and commodity expert research of solvents for Flexography:

1. Chemical research:

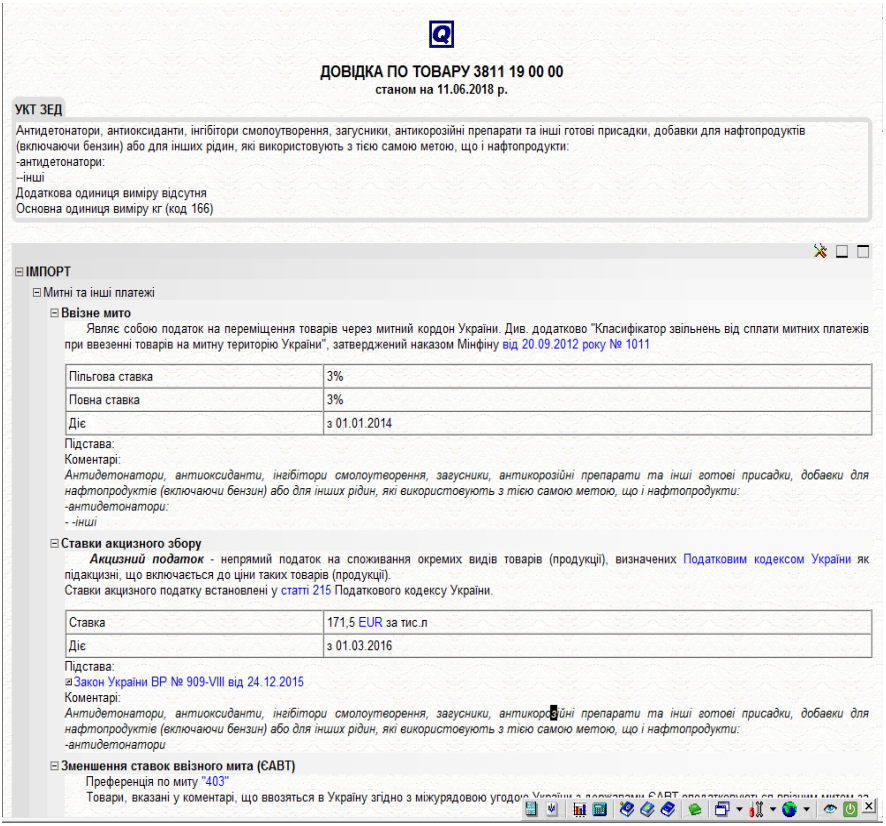
– setting the appearance;

– measurement of density;

– gas chromatographic study with flame-ionization detection;

– IR spectrometric study;

– other research methods, if appropriate, in the laboratory (determination of water content by titration by K. Fischer or gas chromatography with a heat conductor detector, determination of electrical conductivity or dielectric constant, etc.).



ДОВІДКА ПО ТОВАРУ 3811 19 00 00
станом на 11.06.2018 р.

УКТ ЗЕД

Антидетонатори, антиоксиданти, інгібітори смолоутворення, загусники, антикорозійні препарати та інші готові присадки, добавки для нафтопродуктів (включаючи бензин) або для інших рідин, які використовують з тією самою метою, що і нафтопродукти:
-антидетонатори:
--інші
Додаткова одиниця виміру відсутня
Основна одиниця виміру кг (код 166)

ІМПОРТ

Митні та інші платежі

Ввізне мито

Являє собою податок на переміщення товарів через митний кордон України. Див. додатково "Класифікатор звільнень від сплати митних платежів при ввезенні товарів на митну територію України", затверджений наказом Мінфіну від 20.09.2012 року № 1011

Пільгова ставка	3%
Повна ставка	3%
Діє	з 01.01.2014

Підстава:
Коментарі:
Антидетонатори, антиоксиданти, інгібітори смолоутворення, загусники, антикорозійні препарати та інші готові присадки, добавки для нафтопродуктів (включаючи бензин) або для інших рідин, які використовують з тією самою метою, що і нафтопродукти:
-антидетонатори:
- -інші

Ставки акцизного збору

Акцизний податок - непрямий податок на споживання окремих видів товарів (продукції), визначених Податковим кодексом України як підакцизні, що включається до ціни таких товарів (продукції).
Ставки акцизного податку встановлені у статті 215 Податкового кодексу України.

Ставка	171,5 EUR за тис.л
Діє	з 01.03.2016

Підстава:
Закон України ВР № 909-VIII від 24.12.2015
Коментарі:
Антидетонатори, антиоксиданти, інгібітори смолоутворення, загусники, антикорозійні препарати та інші готові присадки, добавки для нафтопродуктів (включаючи бензин) або для інших рідин, які використовують з тією самою метою, що і нафтопродукти:
-антидетонатори

Зменшення ставок ввізного мита (ЄАВТ)

Преференція по миту "403"
Товари, вказані у коментарі, що ввозяться в Україну згідно з міжурядовою угодою України з державами ЄАВТ, оподаткуються за пільговим митом за

Fig. 3. Product reference 3811 19 00 00 (anti-knockers)

2. Commodity researches conducted after a comprehensive assessment by an expert chemist (usually in the field of research alcohol-containing mixtures or related specialties) not only the nature, properties and composition of the objects provided, as well as compliance with the declared field of their actual use (as solvents for Flexography). For this purpose, a comparison of the provided normative documents with the products and actually received data — physico-chemical parameters.

Here is an example of a comprehensive expert research from the stage of obtaining research objects to the formation of conclusions-answers to the question: What characteristics of the UCT ZED corresponds to the sample given for the study of the liquid?

The stages of the chemical study and the results obtained (based on the example of a solvent for ethanol Flexography available in the KhRIFE).

1. — setting the appearance; The study provides a transparent colorless liquid without known precipitate and dispersed particles.

2. — measurement of density; The determination was carried out at the temperature of 20 ° C at an arithmetic level. The density value was 794 kg/m^3.

3. — Gas chromatographic study with flame-ionization detection; The gas chromatographic study was carried out on a chromatograph "Crystal 2000M", under the following technical conditions: carrier gas — nitrogen; detector type — fiery-ionization; column — FFAP, 50 m × 0.25 mm; detector temperature — 190 ° C; evaporator temperature — 230 ° C; gas carrier gas consumption — 40 ml / min; initial temperature of the column — 75 ° C; terminal temperature of the column — 180° C; analysis time — 30 min.

As a result of the chromatographic study, it was found that the sample contained ethanol (the main component), ethyl acetate (5.8 % by volume), micronutrients of acetaldehyde, components of fuel oil, and some unidentified components.

An example of the resulting chromatography is shown in Fig. 4

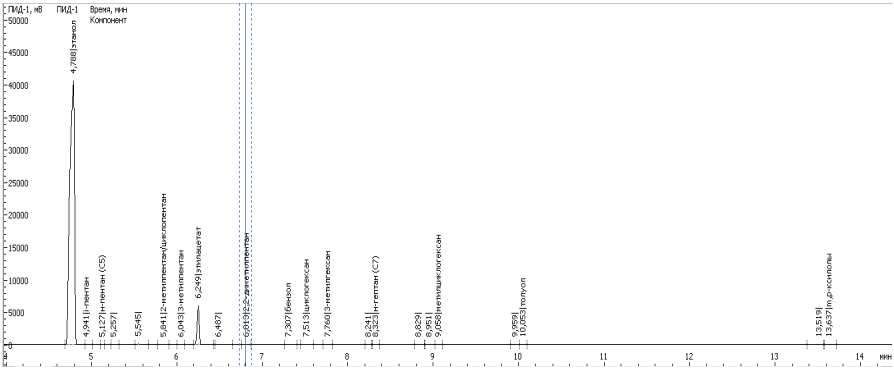


Fig. 4. Chromatogram of the provided solvent sample

4. — IR spectrometric study; The registration of the absorption spectra of the IR region of the spectrum was carried out on a Nicolet 380 spectrometer using the method of disturbed complete internal reflection on a crystal with ZnSe. Parameters of the analysis: Parameters of the analysis: measurement area — 4000–650 cm^{-1}; permissive capacity — 4; recording speed — 0.6329; gain — 4; number of scans — 32.

As a result of the IR spectrometric study, it was found that in the spectrum of the object provided for the study, absorption bands of different intensities in the range of about 3500–2850 and 1700–800 cm^{-1} are observed. Infrared spectra of the given sample are typical for mixtures based on ethyl alcohol.

The explicit absorption band at about 1640 cm^{-1}, characteristic for water, was not included in the given object. This indicates the absence of water in the sample provided within the sensitivity of the device (~ 1 % vol.).

Infrared spectrum of the given object is shown on Fig. 5

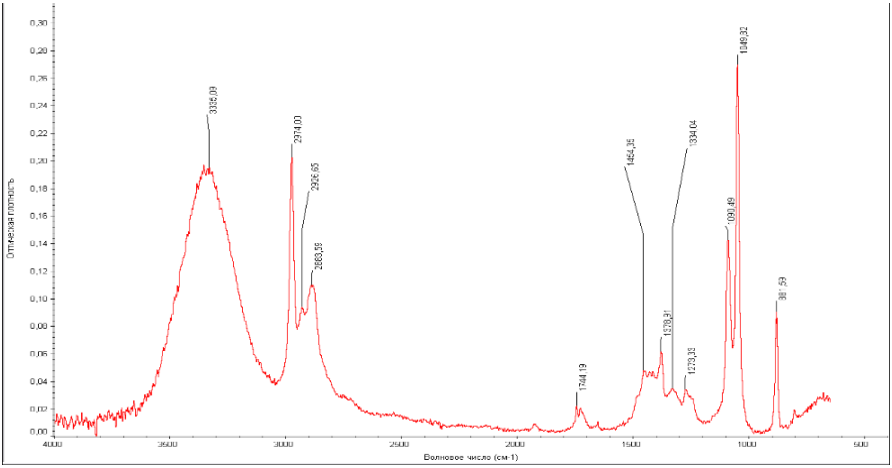


Fig. 5. Infrared spectrum of the given object

According to the conducted chemistry studies, the expert concluded that the given sample of the liquid corresponds to the description of Design Specifications of Ukraine: 20.3–36031709–004: 2016 "*Organic solvent for flexo and paintwork. Design Specifications*

5. Commodity research. Commodity research study of the given object was conducted taking into account the initial data from the documents submitted for research, in accordance with the methodological recommendations[1] using data obtained as a result of chemical research. The information obtained was summarized in the table.

Thus, as a result of this work, an indicative algorithm is made for experts to conduct complex expert studies involving experts of the chemist (mainly from the research of alcohol-containing mixtures) and commodity scientist (determination of the cost of machines, equipment, raw materials and consumer goods). A concrete example illustrates the results that can be obtained in the study of such solvents. Main differences between the solvent samples for ethanol flexo from mixtures of this composition, but for other purposes (mainly high-octane additives for automotive gasoline) are demonstrated.

[1] Lozovyi A. I. Dontsova O. S. Hubareva V. M. (2009) *Metodychnyi posibnyk z pytan pryznachennia ta provedennia sudovykh tovaroznavchykh ekspertyz prodovolchykh tovariv z metoiu vyznachennia yikh vartosti.* [Tutorial on the appointment and conduct of forensic examination of food products in order to determine their value]. Kharkiv : KhRIFE, 108 p.

Table

Commodity research of the submitted sample

Output from the results of the study of petroleum products and combustible materials	Description and characteristics of the product with[1]
Object * labeled as *solvent for flexographic works* submitted for to research: – contains ethanol (main component), ethyl acetate (second component), admixtures of aldehydes, fuel oils, esters and separate unidentified components; – meets the requirements of the technical specifications provided for the appearance, content of ethanol, ethyl acetate and density values; – does not apply to ethyl alcohol recovered or ethyl alcohol denatured or bioethanol; – is a mixture based on ethanol; – corresponds to the description of Design Specifications of Ukraine: 20.3–36031709–004: 2016 *Organic solvent for flexo and paintwork. Technical conditions* for solvents intended for Flexography; – intended for use as a solvent in accordance with the given technical conditions.	**Group 38** **Various chemical products** Explanation to heading 3814: 3814 00 Organic solvents and diluents, not specified in other headings; Ready to remove paints or varnishes: 3814 00 10 00 — on the base of butyl acetate 3814 00 90 — others: – on the basis of acetone, xylene, toluene, 2–Ethoxyethanol, solvent, white spirit, ethanol: 3814 00 90 11 — Used for the industrial assembly of motor vehicles 3814 00 90 19 — others 3814 00 90 90 — others
*Note. * note: does not represent a compound of a specified chemical composition and does not contain dyes. According to the UCT ZED, the following two characteristics of the product subheading 3814 00 90 19 provided for the study of liquid in two bottles: *Various chemical products Solvents and disintegrates are complex organically, in other commodity positions are not specified; Ready to remove paints or varnishes: — other: — based on acetone, xylene, toluene, 2–Ethoxyethanol, solvent, white spirit, ethanol: — other*	

[1] *Poiasnennia do Ukrainskoi klasyfikatsii tovariv zovnishnoekonomichnoi diialnosti (poiasnennia do UKTZED), ofitsiine vydannia, Derzhavna mytna sluzhba Ukrainy* [Explanation to the Ukrainian Classification of Goods for Foreign Economic Activity (explanation to UCT ZED), official publication, State Customs Service of Ukraine], Kyiv, 2004. Electronic resource / software QDPro — documents.

КОМПЛЕКСНЕ ЕКСПЕРТНЕ ДОСЛІДЖЕННЯ РОЗЧИННИКІВ ДЛЯ ФЛЕКСОДРУКУ НА ОСНОВІ ЕТАНОЛУ

В. А. Руднєв, О. С. Донцова, А. Ф Клімчук., П. В. Карножицький, А. О. Кузьміних

Рекомендовано алгоритм дослідження експертом-хіміком розчинників для флексодруку на основі етанолу. Наведено комплекс ознак, достатній для експерта-товарознавця при визначенні характеристик товару відповідно до УКТЗЕД. Підкреслено необхідність використання додаткової нормативно-технічної документації для проведення комплексного хімічного та товарознавчого дослідження. До переліку методів, використання яких дозволяє отримати конкретні відповіді на питання, поставлені на вирішення експертів, належать газова хроматографія й ІЧ-спектрометрія, а також інші фізико-хімічні методи: вимірювання щільності, фракційного складу тощо. Отриманий комплекс ознак є достатнім для формування висновку в категоричній формі.

Ключові слова: розчинники для флексодруку, зневоднений етанол, газова хроматографія, ІЧ-спектрометрія, комплексне експертне дослідження.

КОМПЛЕКСНОЕ ЕКСПЕРТНОЕ ИССЛЕДОВАНИЕ РАСТВОРИТЕЛЕЙ ДЛЯ ФЛЕКСОПЕЧАТИ НА ОСНОВЕ ЭТАНОЛА

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Применение газовой хроматографии позволяет получить основные данные о составе смеси, то есть выявить основной компонент, установить наличие примесей макро- и микрокомпонентов на качественном и количественном уровнях. Получить данные о наличии влаги можно с применением ИК-спектроскопии. Количественные параметры о наличии воды можно получить с применение методов титрования по К. Фишеру или с применением газовой хроматографии с детектором по теплопроводности. Параметры плотности и фракционного состава позволяют выявить (косвенно) наличие иных примесей, а также установить соответствие исследуемого объекта требованиям соответствующей нормативно-технической документации. Полученный комплекс является достаточным для формирования выводов в категорической форме и не требует дополнительных данных при условии удовлетворения приведенных признаков, к которым относятся: 1. Наличие этилового спирта как основного компонента (как правило, более 90 %). 2. Обезвоженность — является одним из ключевых показателей, который позволяет использовать растворитель для флексопечати. 3. Наличие компонентов, которые добавляются к этанолу для обеспечения необходимой летучести (например, сложные эфиры). 4. Низкое содержание тяжелых (высококипящих) компонентов. Рассмотрены отличия растворителей для флексопечати от других подобных объектов, что может быть важным при проведении экспертных исследований. Помимо отличий в составе и свойствах рассмотренных продуктов, показаны также отличия в характеристиках товара по Украинской классификации товаров внешнеэкономической деятельности. Предложен пример использования данных, полученных в результате химических исследований, экспертом-товароведом при формировании категорических выводов на поставленный вопрос.

Ключевые слова: растворители для флексопечати, обезвоженный этанол, газовая хроматография, ИК-спектрометрия, комплексное экспертное исследование.

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NATURAL MODELING METHOD FOR THE COMPLETE JUDICIARY, TRANSPORTATION AND TRANSPORTATION AND AUTOMOTIVE EXAMINATION

It is indicated the importance of using the method of natural modeling as one of the key methods in the implementation of complex forensic, transport and tramway and automotive expertise in the investigation of road accidents.

Keywords: complex forensic medical, transport trace evidence and auto-technical expertise, method of full-time simulation, mechanism of road accident.

In modern practice of investigation of criminal proceedings on the facts of road traffic accidents (hereinafter referred to as road accidents), the appointment of complex forensic medical, transport and traction and automotive expertise is becoming increasingly widespread.

The necessity of obtaining the results of such examinations is conditioned by the fact that the accidents with lethal consequences and the receipt of the participants of the incident of bodily harm of various degrees of gravity reaches more than 30 % (according to the statistics of the State Enterprise of Ukraine), which, in particular, is due to their number at night and cases of disappearance drivers from an adventure place.

During the last decades, in the first place, complex examinations are carried out in the complex of forensic medical, transport and tramway and automotive expertise, which solves the issue that, according to A. M. Vorobyov, belongs to the joint competence of experts of different

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specialties; with this complex examination cannot be a complex (conglomerate) of various examinations[1].

For the correct assessment of the data obtained during the inspection of the victims, the direct mutual acceptance by all experts of traces of bodily injuries, clothing and vehicles is important[2].

The method of full-time modeling during transport trace evidence examinations, including complex with forensic experts, is one of the types of expert experiments, which makes it possible to simulate (reproduce) the mechanism of the accident as much as possible in terms of contacting vehicles between themselves, vehicles with others about Vehicles and vehicles with a person[3]. Its essence is to find and match contact pairs — track-forming and trace-taking surfaces on objects that can be vehicles, immovable objects, people, etc.

Forensic experts consider that the essence of the simulation is the establishment of the necessary knowledge about the simulated object (that is, the original), which during the study is achieved using the method of comparison, the result of which is to establish a model analogy with the original. Cognitive (imaginary) modeling of forensic medical determinations is an inalienable process of expert research[4].

In complex examinations with the participation of forensic experts and transport trace evidence experts, a modeling model with the participation of a statistician or a participant directly involved in an accident, or a dummy using a car of the same brand and model, such as a car, has the most important role for evaluation of the mechanism of the formation of bodily injuries in concrete individuals. who participated in an accident[5].

The expert's conclusions, as a rule, should be categorical, since only such conclusions can be the basis of court decisions[6]. The categorical conclusion

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[1] Vorobiov A. M. (2009) *Pytannia optymizatsii provedennia kompleksnykh ekspertyz. Ukrainskyi sudovo-medychnyi visnyk* [Issuesof optimization of complex examinations. Ukrainian Forensic Medicine Bulletin]. Kyiv : GBSME, № 24 (2). P. 17–19 [in Ukrainian].

[2] Dodyna L. N. (1969) *Kompleksnye sudebno-medicinskie jekspertizy dlja opredelenija mehanizma travmy. Materialy 5-j Vsesojuz. nauch. konf. sud. Medikov, 2–5 ijulja 1969 g*. [Comprehensive forensic examinations to determine the mechanism of injury. Content of the 5th All-Union Academic Conference of Forensic Examiners. July 2–5, 1969]. Moscow : Medicine, V. 1. P. 61–63 [in Russian].

[3] *Transportno-trasologicheskaja jekspertiza po delam o dorozhno-transportnyh proisshestvijah (diagnostiche-skie issledovanija)/otv. red. Ju. G. Koruhov* (1988) [Transport and trace evidence examination on road traffic accidents (diagnostic research) / Editor-in-chief Yu. H. Korukhov]. Moscow : MYO SSSR, VNIISE, Issue II. 119 p. [in Russian].

[4] Burchynskyi V. H. Voronov T. V. Hurov O. M. (2009) *Proektuvannia zakonomirnykh zv'iazkiv u sudovo-medychnii praktytsi. Povidomlennia druhe: Modeliuvannia i konstruiuvannia sudovo-medychnykh determinatsii. Ukr. sud.-med. visnyk* [Design of regular relationships in forensic medicine practice. Second message: Modeling and designing of forensic medical determinations. Ukr. sud. -med. visnyk]. Kyiv : GBSME, № 24 (2). P. 4–7 [in Ukrainian].

[5] Plevynskys P. V. Papers mentioned above, p. 216.

[6] Shabadei A. M. Shevtsov S. O. *Dorozhno-transportnye proisshestvija. Osobennosti rassledovanija* (2003) [Road accidents. Features of the investigation]. Kharkov : Fact, p. 116 [in Ukrainian].

is that in an unconditional manner, excluding any other judgment, any fact is affirmed or denied (excluded). Categorical conclusions can only be made when the expert is absolutely convinced of their reliability, and this belief is based on objective scientifically sound data[1].

In the many years of practice of carrying out complex forensic medical, transport and tramway and auto-technical expertise by court experts of the engineering and transport research sector of the Poltava branch of Hon. Prof. M. S. Bokarius Kharkiv Research Institute of Forensic Examinations of the Department of Forensic Medical Examination Division of the Oblast Bureau of Forensic Medical Examination of the Poltava Region State Medical Inspection, an integral part of the study, was the application of the method of natural modeling as a type of expert experiment, the benefits of which were assessed by the experts themselves, and employees of the investigating authorities.

Proceeding from own experience, the method of imaginary (cognitive) modeling does not fully disclose the mechanism of human contact with elements of vehicles, and therefore, in this case, in the future it is often impossible to provide categorical answers to the questions that arise in the investigation. At the same time, when applying the method of natural modeling it is possible to confirm or refute the variants of previous expert versions and reduce their number to a minimum — in most cases to one. The above will allow reaching categorical conclusions about the mechanism of contacting a person with the elements of vehicles and is crucial when solved by experts in motor vehicles questions about establishing a causal link between the actions of the road accident participants and the requirements of the Road Traffic Rules of Ukraine.

In our opinion, the use of the method of virtual modeling leads to a practical combination of expert knowledge in the field of transport trace evidence and automotive, on the one hand, and forensic medicine — on the other, which greatly expands the capabilities of experts in solving the expert task and in the future significantly increases the reliability of expert conclusions and their scientific validity.

The visualization of the results obtained and a detailed description of the research process, the production of schemes, photographic tables on the reconstruction of the road accident, make it possible to understand its entire mechanism not only to specialists in the field of transport, but also to all participants in the trial. Example photo with description below.

[1] Zavalniuk A. Kh. (2006) *Pro neobkhidnist zaprovadzhennia elementiv dokazovoi medytsyny u sudovo-medychnu praktyku. Ukr. sud.-med. visnyk.* [On the need to introduce elements of evidence-based medicine in forensic medicine practice. Ukr. sud. -med. visnyk]. Kyiv : GBSME, № 1 (1). P. 39–42 [in Ukrainian].



Fig. 1. A snapshot of the location of a static on the passenger's seat and the driver's seat on the moped at the moment of contact of the passenger with the elements of the front of the car of the MERCEDES-BENZ car (front view)



Fig. 2. A snapshot of the location of the static on the passenger's seat and the driver's position on the moped at the moment of contact of the passenger with the elements of the front of the cab (left-handed with a decorative grille under the windshield) of the MERCEDES-BENZ (left side view)

The practice of continuous improvement of the method, systematization of the acquired experience and visualization of the results of full-scale modeling necessitated the use of complex forensic, transport and tramway and automotive expertise in the investigation of an accident in the Poltava region.



Fig. 3. A snapshot of the location of a static at the passenger's seat and the driver's position on the moped at the moment of contact of the passenger with elements of the front of the cab (left-handed with a decorative grille under the windshield) of the MERCEDES-BENZ (right side view)

The practice of continuous improvement of the method, systematization of the acquired experience and visualization of the results of full-scale modeling necessitated the use of complex forensic, transport and tramway and automotive expertise in the investigation of an accident in the Poltava region.

Thus, complex forensic, transport and tramway and automotive expertise in proving the fault of drivers of vehicles that have disappeared from the scene of an accident are particularly important, since these drivers mostly provide fake variants of the development of the road transport situation (versions) that can be refuted in in most cases, only by means of a comprehensive forensic, medical and tramway examination and automotive expertise, during which experts use the method of full-scale simulation.

The complex forensic, transport and tramway and auto-examination expertise in the case when a pedestrian run by several vehicles is one of the methods of determining the mechanism of an accident, namely: establishing a sequence of contacting vehicles with a person by means of differentiating bodily injuries in accordance with the geometry of the body and the protruding elements on it of each of the vehicles involved in the road accident, and hence in the further proof of the guilt of drivers.

The complex forensic, transport and tramway and automotive expertise is also appointed by the investigating authorities in the case when it is necessary to establish the person who was driving a vehicle (car or motor vehicle) during the road accident and, in the case of interference with the management of a vehicle of another person — not a driver, the location of the pedestrian in relation to the injuring elements of the vehicle and the installation where the person was at the moment of the accident — on a

bicycle or as a pedestrian, driving a bicycle near, of experts set directly by the method of model simulations.

The role of complex forensic, transport and tramway and automotive expertise plays a role in refuting the versions of road accident participants in an effort to avoid liability by checking their testimony on the technical capability of an accident mechanism, which in most cases can only be established with the help of the use of the simulation method.

Criminal offenses related to the accident are particularly complex, in which there is no intention, therefore the evidence of the objective part of the crime is of particular importance. Consequently, the method of full-scale modeling, with proper illustration of its results in the form of visual photographs and constructed schemes, provides the possibility for the judicial-investigative bodies to disclose in detail and to prove the mechanism of the development of an accident.

Thus, the method of full-scale modeling, as a type of expert experiment, became an integral part of complex forensic, transport and tramway and auto-technical expertise, which are carried out jointly by court experts of the engineering and transport research sector of the PoltaV. A. branch of the Kharkiv Research Institute of Forensic Expertise and Forensic Medicine Experts the Department of Forensic Medical Examination of the Oblast Bureau of Forensic Medical Examination of the healthcare department of the PoltaV. A. Oblast State Administration, having acquired a significant evidentiary value for the reconstruction of the special difficult accidents.

МЕТОД НАТУРНОГО МОДЕЛЮВАННЯ ПРИ ПРОВЕДЕННІ КОМПЛЕКСНОЇ СУДОВО-МЕДИЧНОЇ, ТРАНСПОРТНО-ТРАСОЛОГІЧНОЇ ТА АВТОТЕХНІЧНОЇ ЕКСПЕРТИЗИ

О. В. Саушкін, А. А. Ханянц, А. Г. Бондарєва, С. В. Сулим

Указано на важливість застосування методу натурного моделювання як одного з ключових методів при проведенні комплексних судово-медичних, транспортно-трасологічних та автотехнічних експертиз при розслідуванні дорожньо-транспортних пригод.

Ключові слова: комплексна судово-медична, транспортно-трасологічна та автотехнічна експертиза, метод натурного моделювання, механізм дорожньо-транспортної пригоди.

МЕТОД НАТУРНОГО МОДЕЛИРОВАНИЯ ПРИ ПРОВЕДЕНИИ КОМПЛЕКСНОЙ СУДЕБНО-МЕДИЦИНСКОЙ, ТРАНСПОРТНО-ТРАСОЛОГИЧЕСКОЙ И АВТОТЕХНИЧЕСКОЙ ЭКСПЕРТИЗЫ

А. В. Саушкин, А. А. Ханянц, А. Г. Бондарева, С. В. Сулим

Указано на важность применения метода натурного моделирования как одного из ключевых методов при проведении комплексных судебно-медицинских, транспортно-трасологических и автотехнических экспертиз. Этот метод дает возможность установить лицо, которое во время дорожно-транспортного происшествия находилось за рулем транспортного средства, в случае

вмешательства в управление транспортным средством другого лица — водителя, установить его местоположение в салоне; местоположение пешехода относительно травмирующих элементов транспортного средства; установить, где находился человек в момент дорожно-транспортного происшествия — на велосипеде или как пешеход, вел велосипед рядом. Указанный метод также позволяет проверить показания участников дорожно-транспортного происшествия, что в дальнейшем исключает надуманные варианты его развития. Важность метода заключается в возможности максимально точно смоделировать (воспроизвести) механизм дорожно-транспортного происшествия касательно контакта транспортных средств между собой, с другими объектами и человеком. Преимущество метода натурного моделирования над методом мысленного моделирования, который сегодня более распространен при выполнении комплексных судебно-медицинских и транспортно-трасологической экспертиз, — это возможность подтвердить или опровергнуть варианты предыдущих экспертных версий и свести их количество к минимуму — в большинстве случаев к одной. Он позволяет в дальнейшем прийти к категорическим выводам относительно механизма контакта человека с элементами транспортных средств и имеет решающее значение при решении экспертами-автотехниками вопросов об установлении причинной связи между действиями участников дорожно-транспортного происшествия и требованиями Правил дорожного движения Украины.

Ключевые слова: комплексная судебно-медицинская, транспортно-трасологическая и автотехническая экспертиза, метод натурного моделирования, механизм дорожно-транспортного происшествия.

INTERNATIONAL ACADEMIC TRAINING ON THE TOPIC CONCEPT OF ACCREDITATION IN THE FIELD OF FORENSIC SCIENCE

March 2, 2018, based on the Hon. Prof. M. S. Bokarius Kharkiv Research Institute of Forensic Examinations of the Ministry of Justice of Ukraine, held an international scientific and practical seminar on the topic "Concept of accreditation in the field of forensic expert activity", devoted to accreditation of expert institutions and obtaining certificates on accreditation in various spheres of forensic- expert research.

The event was attended by representatives of the National Center for Judicial Expertise of the Republic of Moldova, the Kharkiv Scientific Research Institute, the Kiev Scientific Research Institute, the Dnipropetrovsk Research Institute, the Odessa Scientific Research Institute, the Donetsk Scientific Research Institute, the Research Center for Forensic Examination on Intellectual Property, the Scientific Experimental Expertise the Criminal Center of the Ministry of Internal Affairs of Ukraine, the Ukrainian Research Institute for Special Equipment and Forensic Expertise of the Security Service of Ukraine, the Kharkiv Regional Bureau for Forensic Medical Examination and others.



Workshop participants

Greeted the participants asked Deputy Director of Kharkiv NDISE, Doctor of Law, Associate Professor O. P. Uhrovetskyi, noting that such

seminars are important in communication expert institutions and raise the level of consciousness of professionals in quality control and can determine the ways and priority on-line forensic expertise in Ukraine.

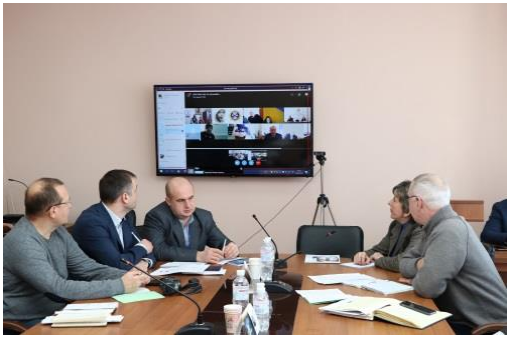
Center for Forensic Examination under the Ministry of Justice of the Republic of MoldoV. A. O. S. Kataraha and a court expert of the National Center for Forensic Examination under the Ministry of Justice of the Republic of MoldoV. A. N. M. Gureu with a report on some aspects of accreditation of forensic expert laboratories. Accreditation as factors of trust in the subject of expert activity. M. Lisenko and Senior Researcher of Dnipropetrovsk Research Institute, Candidate of Technical Sciences., Docent ***O. Yu. Kholodova***, Assistant Director of the Kyiv Research Institute ***A. O. Poltavskyi*** talked about the best practical guidance of ENFSI, their place and due to normative and methodical provision of forensic examinations in Ukraine (for example, fingerprint examination).



Discussion of problem issues by the seminar participants

Technical requirements for testing and calibration laboratories according to DSTU ISO / IEC 17025: 2006 are considered in the report of the head of the department of the Kharkiv RIFE ***A. S. Onopriienko***. The head of the Dnipropetrovsk SRFC department of the Ministry of Internal Affairs of Ukraine, ***O. Yu. Mazur***, has devoted a report to some of the problematic issues that arise during the accreditation in the area of forensic expert activity. The role and problems of standard samples in the examination of narcotic drugs, psychotropic substances, their analogues and precursors was considered by the head of the laboratory of the Kharkiv Scientific Research Institute, the candidate of chemical sciences V. A. Rudnev and the senior researcher of the Kharkiv Scientific Research Institute A. F. Klimchuk. Deputy Chief of the Department of Cherkasy SRFC of the Ministry of Internal Affairs of Ukraine V. V. Kozhevnikov considered in the report changes in concepts or additions in the aspect of the error and uncertainty of measurements. A study of the technical condition of the lighting system of vehicles using modern devices is dedicated to the report of the head of the Laboratory of the Kharkiv Research Institute ***A. V. Lubentsov*** and the senior researcher of the Kharkiv Scientific Research

Institute ***A. O. Kazarov***. The head of the Department of Kharkiv RIFE Yu. O. Nosatenko reported on the peculiarities of preparation of the laboratory for trace evidence, ballistic, explosion and technical research of documents according to the requirements of the international standard ISO / IEC 17025. The leading scientist of Kharkiv Scientific Research Institute, the candidate of technical sciences ***O. V. Kolomiitsev*** devoted a report to the problematic aspects of the calculation of the uncertainty of measurements in determining the main criterion for evaluating the properties of balloons of traumatic action.



Presentation of provided materials

Among the Laboratory Comparative Test as the main method of external independent evaluation of the quality of the results of expert research and the determination of the readiness of the laboratory for accreditation according to DSTU ISO / IEC 17025: 2006 reported senior research fellows of Kharkiv Research Institute ***N. O. Zubov***, ***V. V. Somov*** and ***G. V. Loshmanov***. ***V. A. Rudniev***, Head of Laboratory of the Kharkiv Scientific Research Report of the Head of the Laboratory of the Kharkiv Scientific Research Institute, the candidate of technical sciences ***M. O. Mozhaev*** and the heads of the Kharkiv RIFE Departments ***O. I. Brendel*** and ***M. O. Logvinenko*** are devoted to some of the accreditation features of the laboratory of computer-technical, telecommunication research and video and audio research. ***O. V. Naranovych***, Senior Researcher of Kharkiv Scientific Research Institute, reported about the stages and features of accreditation of forensic laboratories. The Head of the Laboratory of Kharkiv Scientific Research Institute, a candidate of legal sciences, ***V. V. Khosha***, in his report, considered the legal basis for the accreditation of forensic institutions of Ukraine.

According to the results of the workshop, an appropriate collection of materials was published.

The material was prepared by V. V. Khosha, Head of the postgraduate department of Kharkiv RIFE, Candidate of Legal Sciences.

SCIENTIFIC RIGHTS OF DELIVERATIONS OF FORENSIC EXPERTS, DEDICATED TO THE DAY OF THE JUDICIAL EXPERTS OF THE REPUBLIC OF MOLDOVA

April 13, 2018 in Chisinau, on the basis of the National Center for Forensic Expertise (NCEC) under the Ministry of Justice of the Republic of Moldova, an international scientific and practical conference "Scientific Awareness of the Findings of Forensic Expertise", was held, dedicated to the Day of the Forensic Expert of the Republic Moldova.



In the conference room

The conference was attended by representatives of judicial and expert institutions of various departments of the Republic of Moldova, Romania, Ukraine, and Italy. The published collection of materials of the international scientific-practical conference also contains reports of the representatives of judicial-expert institutions of the Republic of Belarus.



Conference participants

The opening ceremony was attended by the Director of the NCES at the Ministry of Justice of the Republic of Moldova, ***Olha Kataraha***, who gave the participants an active and positive mood for a constructive discussion of a wide range of issues during the conference.



Speech by O. Kataraha

During the ceremonial part Olha Kataraha was awarded the Diploma to the Director of the Kharkiv RIFE Olexander Kliuiev “For a significant contribution to the development of forensic expertise.”,



Presentation of the congratulatory letter from the staff of HNISEE

Deputy Director for Scientific Work ***Ella Simakova-Yefremian*** and academic secretary of KhRIFE ***Larysa Derecha*** congratulated the conference participants on the Day of the Forensic Expert and conveyed a congratulatory letter from the Kharkiv NIIESE collective, signed by the Director of the

Institute, Doctor of Law, Professor, Honored Lawyer of Ukraine Aleksandr Kliuiev, and also certificates of participants of the international scientific-practical seminar "Concept of accreditation in the field of forensic expert activity", held in March 2018, initiator The centers were the Center for Forensic Examination under the Ministry of Justice of the Republic of MoldoV. A. and the Kharkiv RIFE.

Also, during the solemn part was an updated Cooperation Agreement between the NCTS under the Ministry of Justice of the Republic of MoldoV. A. and the National Institute for Forensic Examination of the Ministry of Justice of Romania.



Signing the contract

In the plenary session, ***Olha Kataraha,*** Director of the NCES at the Ministry of Justice of the Republic of Moldova, made a presentation on the conceptual issues of conducting forensic examinations and drawing up expert opinions. The report emphasized the mistaken and inaccurate interpretation of some legal provisions of the new Law of the Republic of MoldoV. A. "On Forensic Examination and Status of Forensic Expert", which came into force on December 10, 2016. With a report on the specialties of the use of special knowledge in the criminal process in the light of the provisions of the same law, Professor of Law, teacher of the International Independent University of Moldova, ***Gheorghe Golubenko***, spoke. Director of the Kiev RIFE ***Alexander Ruvin*** delivered a report on his work on international standardization of forensic expert support for justice in order to increase the reliability of judicial evidence in the activities of subdivisions of the Kiev RIFE. Also interesting was the report of the Deputy Director on the scientific work of the Kharkiv RIFE ***Ella Simakova-Yefremian***: *On Scientific Research as one of the Priorities in the Activities of the Hon. Prof. M. S. Bokarius Kharkiv Research Institute of Forensic Examinations*.



Speech of E. Simakova-Yefremian

In addition, the expert was a criminalist, head of the regional (Cluj) laboratory of forensic examinations of the National Institute of Forensic Expertise of Romania, ***Sorin Alemo-Ryan***, with a report on the problems of conducting research on copies of documents. The problem is not new in this area, the author noted, since the approach to its solution is different from that of experts within one country, and it is seen differently in the EU countries. Of particular importance is the problem acquired in the field of handwriting research. The expert's opinion is that not the study of copies sometimes creates new vague situations in the investigation of cases, therefore, copies of documents need to be investigated, but, accordingly, it is necessary to argue the investigation and the court of the impossibility of answering some questions, especially with regard to handwriting expertise.



Speech by S. Alemoryan

An attorney at the Ministry of Justice of the Republic of MoldoV. A. ***Anatoly Akimov*** made a report on issues and problems of the composition of a forensic expert in the field of construction and technical expertise.

Representatives of Forinst (Forensic Instruments) ***Francesco Dellavalla*** and ***Graziano Candue*** (Turin, Italy) made presentations and presentations of equipment for document research.



Speech by G. Candue



The Forinst equipment

Reports with presentations are published in the collection of materials of the international scientific-practical conference "Scientific substantiation of forensic examinations", dedicated to the Day of Judicial Expert of the Republic of Moldova, which includes more than 40 reports, placed in accordance with the topic of the conference.

Information was prepared by: ***L. Derecha****, academic secretary of Kharkiv Institute of Forensic Expertise, Ph.D. in Biology, senior researcher and* ***N. Gurreu****, judicial expert of the NCES at the Ministry of Justice of the Republic of Moldova.*

INTERNATIONAL SCIENTIFIC-PRACTICAL CONFERENCE EURASIAN PARTNERSHIP OF FORENSIC EXPERTS: CONCLUSIONS, PROBLEMS, WAYS OF SOLVING AND PROSPECTS OF DEVELOPMENT

On April 19–20, 2018, an international scientific and practical conference "Eurasian Partnership of Forensic Experts: Conclusions, Problems, Solutions and Perspectives of Development", was held in Minsk, Republic of Belarus, attended by representatives of more than 34 expert institutions from over 20 Countries (Republic of Belarus, Federal Republic of Germany, Swiss Republic, Republic of Finland, People's Republic of China, Republic of Latvia, Republic of Lithuania, Republic of Moldova, OAU, USA, Azerbaijan Republic, Republic of Armenia, Republics Kazakhstan, Kyrgyz

Republic, Republic of Serbia, Tajikistan, Turkmenistan, Uzbekistan, Montenegro) and representatives of the Kharkov RIFE.



The members of international scientific-practical conference

During the conference, an agreement was signed on cooperation between the Scientific and Practical Center of the State Committee of Forensic Expeditions of the Republic of Belarus and the Kharkiv Scientific Research Institute, which provides for cooperation in the field of research on theoretical, legal, organizational and methodological problems. forensic expert activity, creation of new and improvement of existing methods, methods of expert research, exchange of experience of expert practice.

The purpose of the conference was to identify problematic issues of forming a new paradigm and legal regulation of forensic expert activity and related activities and ways of forming a modern organizational model of forensic expertise in European countries.

The participants of the conference stated that the problems of differentiating judo-expert and related activities are a traditional object of scientific research of the general provisions of the theory of forensic expertise. One of the results of the research is the clear definition of the criteria for differences of forensic examination from another applied research.



Signing a cooperation agreement

In the speeches, representatives of judicial and expert institutions from different countries pointed out that the legal regulation of conducting forensic examination is carried out by the procedural and special legislation on forensic expert activity. However, their demarcation is a difficult task that requires their own decision.



Speech by S. A. Evmenenko, deputy chairman of the State Committee of Forensic Expertise of the Republic of Belarus

Representatives of the Kharkiv Scientific Research Institute made presentations during the international scientific and practical conference. First Deputy Director of Hon. Prof. M. S. Bokarius Kharkiv Research Institute of Forensic Examinations, ***O. P. Uhrovetskyi***, spoke on the issue of improvement of forensic expert activity in the aspect of reforming the expert provision of justice in Ukraine. He emphasized that the basis for improvement of forensic expertise is the reform of the system of the Ministry of Justice of Ukraine in relation to the construction of a modern expert system in accordance with similar progressive institutions of the member states of the European Union and the norms of international law and the standards of the ECHR.



Speech by O. P. Uhrovetskyi

O. P. Uhrovetskyi noted that the Ministry of Justice of Ukraine in co-operation with the experts of the project "Support to reforms in the field of justice in Ukraine", and the EU has developed a strategic plan of its activity, which provides directions for reforming activities.

I. V. Bogdanyuk, Head of the Laboratory of Fire Engineering, Engineering Environmental, Electrical and Military Research and Research in Occupational Safety and Health Safety of the Kharkiv Research Institute, made a presentation on the topic "Peculiarities of studies of exceeding the norms of the maximum permissible emission of pollutants into the atmosphere". He noted that the main task of studying excess emission allowances (hereinafter — GDV) of polluting substances is determined in the confirmation of the fact of causing losses to the state as a result of excess emissions of polluting substances into the atmosphere established by the authorities of the State Ecological Inspection of Ukraine (hereinafter — DEI)

and the accuracy of the determination by these bodies of the size and characteristics of excess emissions and confirmation of the correctness of the initial data taken by the DEI to calculate size of damages. Also, details were given about the objects of research in excess of the standards of GDV, which are documentary materials with fixed actual data on the function of emission sources, the presence of pollutants and violations of the standards of GHS pollutants from stationary sources.

During the conference, the representatives of KhRIFE learned about the activities of the State Committee of Forensic Expertise of the Republic of Belarus and adopted a positive experience that can be used to help improve our institution's performance. Thus, at the State Committee there are about 120 types and subspecies of expertise and research and other activities are being carried out to implement the assigned tasks. Positive aspects should include cooperation with the international expert community, including the scientific-methodological and information exchange in the field of judicial expertise.



Representatives of Hon. Prof. M. S. Bokarius Kharkiv Research Institute of Forensic Examinations

In this regard, some work is underway to update the cooperation agreements in the area of forensic expert activity, and new draft agreements are being developed. Currently, agreements are in place with expert institutions of Azerbaijan, Armenia, Kazakhstan, the Russian Federation and Ukraine, agreements with Kyrgyzstan, Mongolia, Uzbekistan, Lithuania, Israel and other states are being prepared.

Information was prepared by V. R. Ostropilets, the head of the laboratory of KhRIFE, Candidate of Legal Sciences.

"ROUND TABLE", MEETING ON THE THEME IMPROVING LEGAL REGULATION OF ASSESSMENT OF MINE AND LEGAL RIGHTS. LAND ESTIMATION PROFESSIONAL EXPERTISE AND EVALUATION ACTIVITY

On April 27, 2018, a round table meeting was held on *Improving the legal regulation of valuation of property and property rights*. Land evaluation. Professional expertise and evaluation activity "on the basis of the Hon. Prof. M. S. Bokarius Kharkiv Research Institute of Forensic Examinations at the initiative of the Ministry of Justice of Ukraine, People's Deputies of the Verkhovna Rada of Ukraine, Kharkiv Research Institute of Forensic Expertise, the Main Territorial Department of Justice in the Kharkiv Region, the Department of Criminology of the Yaroslav Mudry National Law University, and the National Academy of Legal Sciences of Ukraine.

The court round-table was attended by forensic experts from research institutes of forensic examinations of the Ministry of Justice of Ukraine, representatives of the Main Territorial Department of Justice in Kharkiv Oblast, department of organization and control over the implementation of the decisions of the Office of the State Bailiff Service of the Main Territorial Department of Justice in the Kharkiv region, the National Academy Law Sciences of Ukraine, Department of Criminology of the Yaroslav the Wise National Law University, scholars and practitioners in the field and other activities. At the roundtable meeting, discussed issues of legal regulation of property and property rights assessment, land valuation, as well as professional expertise and valuation activities.

O. P. Uhrovetskyi, First Deputy Director of Kharkiv Scientific Research Institute, Doctor of Law, Associate Professor, who on behalf of the Director of the Institute — Doctor of Law, Professor, Honored Lawyer of Ukraine O.M. Kliuiev, welcomed the meeting with the beginning of the meeting. a scientific event and presented its presidium.

O. P. Uhrovetskyi noted that holding a round table on the basis of the Kharkiv Research Institute of Forensic Expertise is a very important event, since it always allows you to gain new knowledge, share experiences, discuss vital issues in lively discussions, which, of course, Well, that's the main topic of this meeting. He noted that the activity of the institute is aimed at realizing the tasks arising from the current legislation, with the aim of providing expert justice to Ukraine's justice by independent, qualified and objective expert-oriented, aimed at maximizing the use of scientific and technological achievements, including on the issues of property valuation, property rights, land valuation, etc. Improving the legal regulation of property valuation and property rights, land valuation is relevant in today's environment for different segments of the population, politicians, economists, lawyers and scholars, which emphasizes the importance of such an event that is taking place today.

The need for such measures is also enhanced by the fact that the professionalism of an expert depends on the deepening of special knowledge, which are formed in the process of scientific discussions of specialists.



Presidium of the Round Table

The congratulatory words were addressed to the people's deputy of Ukraine, the candidate of jurisprudence ***A. P. Denisenko***. He wished the participants of the round table an inspiration in solving the problems facing court experts and appraisers today, and the Verkhovna Rada subcommittee is ready to listen, take and take on a legislative initiative to resolve these issues, because, first of all, the deputy emphasized the evaluation activity it is important to lead to a more qualitative level of work and to prepare professional appraisers in Ukraine.

Greeted the participants of the round table and ***T. P. Yehorova***, the head of the Main Territorial Department of Justice in Kharkiv Oblast, which in practice faces problems, the solution of which requires improvement of the legal regulation of appraisal of property and property rights, new approaches to land valuation, professional appraisal activities and methodological support for carrying out of examinations. She stressed that the round table was organized to discuss issues that arose in the field of evaluation activities and identify ways to overcome existing gaps in legislation. She noted that in the legislation of Ukraine the issues regarding the monopoly of valuation of property and property rights have not yet been completely resolved, which is why legislative issues of some valuation activities in Ukraine are required.



Speech by T. P. YehoroV. A.

A. O. Selivanov, Academician of the National Academy of Legal Sciences of Ukraine, Doctor of Law, Professor, Honored Lawyer of Ukraine, announced the report of ***H. V. Buiadzhy***, State Secretary of the Ministry of Justice of Ukraine, candidate of law sciences on the topic *Innovations in the field of property valuation*. He noted that the submitted report considered the issues related to the legal regulation of valuation of property and property rights, which are revealed during the evaluation of building, commodity and land expert research. It is stressed that they constitute obstacles in modern research and influence the reliability and validity of the conclusions. They were presented for discussion and critical analysis of the problem, namely:

— methodological support for valuation activities — outdated national standards, especially when compared to international ones, give rise to complexity in the application of international standards of assessment, both in the presence of national standards and in their absence;

— departmental isolation and controversy of the regulatory framework, which necessitates at the legislative level to determine which one body should carry out methodological regulation of the valuation of real estate and, in turn, eliminates the problem of scientific and methodological support of expert and valuation activities in Ukraine;

— fuzziness and contradictory normative definitions, which often leads to erroneous conclusions — to eliminate these problems it is necessary to have methods of formal-logical research of reliability, completeness and consistency of definition of definitions and use them in their activities;

— personnel provision, which relates both to court experts and appraisers, since the appraiser demands the education of the appraiser;

— related to the research objects in the form of Evaluation Reports and Review Reports, it is necessary to analyze the typical errors in the Evaluation and Review Reports and to expand the possibilities of reviewing the evaluation reports by forensic experts in comparison with reviewers-appraisers.

Outlined problems identified the direction of holding a round table meeting. In practice, it was a proposal for round table participants — the community of forensic experts and appraisers — to engage in closer research in problematic research and to come up with specific initiatives to improve legal provision.

Academician ***A. O. Selivanov*** in his report on *Problematic issues of legislative regulation of valuation activity* emphasized that the evaluation activity requires profound professional knowledge from specialists, since, first of all, is economic and legal research. At least two branches of law, administrative law and criminalistics are involved in appraisal activities, when courts resolve public and private-law disputes and make court decisions, while taking into account existing civil law circumstances that are subject to mandatory inclusion in the assessment of objects property and land plots. It should be accompanied by the mandatory conduct of professional appraisal expertise as a mandatory element of legal relations in the provision of contractual services to citizens and legal entities.



Speech by Academician A. O. Selivanov

In accordance with the program of the round table, during the course of its holding, the information provided in the reports of the participants of the event was heard and discussed.

S. H. Stetsenko, editor-in-chief of the journal "Public Law", Corresponding Member of the National Academy of Legal Sciences of Ukraine, Doctor of Law, Professor, Honored Worker of Science and Technology of Ukraine, delivered a report on *Evaluation Activity in Media Coverage* and stressed that the public relevance of evaluation and evaluation activities was based on a number of provisions, and also focused on key ones. It identified five key public stereotypes regarding valuation of property, land valuation and valuation activities that are taking place in domestic mass media and stated that the reaction of society, which is retransmitted through the media, is an important factor in the perception of property valuation, land valuation, valuation activity in general. This factor should be taken into account when improving the legal basis for valuation activities.



Speech by S. H. Stetsenko

Head of the Main Territorial Department of Justice in the Kharkiv region ***T. P Yehorova***, co-authored with ***A. A. Kupriyanova***, Deputy Head of the Department — Head of the Department for the Organization and Control over the implementation of the decisions of the Office of the State Bailiff Service of the Main Territorial Department of Justice in the Kharkiv region submitted a report on the topic " The main problems and trends of the development of normative monetary valuation of land in Ukraine "and drew attention to the fact that the violation of the rules for conducting a normative monetary

assessment from leads not only to incorrectly defined capitalized rental income, but also creates a corrupt component in this area, therefore the issue of development of normative monetary valuation of land in Ukraine should be given special attention. The new Methodology for normative monetary valuation of agricultural land has entered into force. According to experts, the proposed method allows to take into account all the necessary rules in order to form an updated system of taxation in the land, because it is designed to show the objective value of land when used in agricultural production. However, this Methodology requires significant improvement in the development of a differentiated coefficient of indexation of normative monetary valuation of land for regions of Ukraine.

R. B. Kaplin, Head of the Laboratory of the Kharkiv Scientific Research Institute, Honored Builder of Ukraine, in a report on the topic "Estimation of the value of shares of enterprises at the present stage of development of forensic examinations", outlined ways of determining the market value of shares of the company and noted that the appraisers in their work are guided by the Law of Ukraine *On evaluation of property, property rights and professional appraisal activity in Ukraine* and forensic experts, respectively, the Law of Ukraine: *On Judicial Expertise*. In addition, he noted that valuing the company's shares is a labor-intensive and uneasy type of valuation. In connection with this, during the examination of the company whose shares are valued, it is necessary to have a large amount of financial and technical information for evaluation and expertise itself in strict accordance with the current legislation.

S. V. Evdokimenko, Doctor of Law, head of the All-Ukrainian Union of Land Appraisers NGO, devoted a report on the topic "Separate aspects of independent assessment in Ukraine", in considering disciplinary issues related to professional appraisal activities. She noted that the Evaluation Law established powers for the adoption of disciplinary decisions on matters of valuation by the State Property Fund of Ukraine, outlined gross violations of normative legal acts on valuation of property, property rights and professional appraisal activities by the appraiser and drew attention to decisions that could be taken on the results of consideration of the issue of professional appraisal activities of the appraiser.

O. O. Mykhalskyi, the head of the laboratory of the Kharkiv Scientific Research Institute, a candidate of legal sciences, in a report on the topic *On the question of determining the material damage caused to the owner of the property* emphasized that the practice shows that in many cases reports on property valuation and determination of material damage, caused to its owner, are biased and poor-quality and outlined ways of solving this problem. By comparing the qualification requirements for the professional activity of a court expert and appraiser, he singled out the following features: a forensic expert can be only a person who has the appropriate higher education in a

particular field of knowledge; An assessor may be a person with any higher education. He suggested concrete ways to overcome the above legal conflicts, namely: determining the damage or the amount of compensation in cases established by law, if the property is completely destroyed, to spend at the cost of the property before its damage.

O. A. Selivanov, the head of the Interregional Division of the State Bailiffs Service in the Osnovyansky and Sloboda districts of Kharkiv, the Main Territorial Department of Justice in the Kharkiv region, presented a report entitled *Application of laws in the activities of the State Bailiffs' Service on property valuation*. He noted that today, during the enforcement of decisions by the ICDs, the assessment of the arrested property is an acute issue. The interest of the debtor is to overstate the valuation of the property and stop the process of its implementation, and the collector — to quickly realize the debtor's property and recover from the last debt. However, the question remains as to the grounds for challenging the valuation of property. He separately noted that it is necessary to challenge the assessment only to the entity that prepares the property valuation report, as the state executor is deprived of the skills and knowledge necessary for the analysis of the Property Valuation Report. In addition, today there is no legislative mechanism for controlling the activity of experts on the part of ICEs after the decision on the appointment of an expert within the framework of enforcement proceedings.

Special attention of the participants of the "round table", session was covered by issues raised by other speakers in their speeches.

V. D. Shipulin, professor of the department of land administration and geoinformation systems of the Kharkiv National University of Municipal Economy. O. M. Beketova, Candidate of Technical Sciences., Docent, Honored Worker of Education of Ukraine presented a report on the topic *Assessment of land in modern land administration systems*. He revealed his vision of further development of land valuation practices in Ukraine based on world best practices in land administration for sustainable development of the country as a whole. The land valuation system allows for the establishment of economic land use management mechanisms that can be implemented through spatial planning at different administrative levels and often supported by land-use rules in various sectors such as agriculture, environmental protection, water basins, transport, etc. He stressed that the issues of land evaluation need to be highlighted and developed in order to take into account the peculiarities of land valuation in the context of the implementation of a comprehensive land administration system in Ukraine.

H. B. Bashkirov, head of the sector of Kharkiv Research Institute, presented a report on the topic *the application of general appraisal methods of the cost approach in determining the approximate cost of construction of complex objects*. He stopped at the fact that due to the impossibility of a complete survey of certain types of construction and assembly and special

works, which belong, including, to the category of hidden. The latter are investigated according to the documents to be drawn up during construction in accordance with the legislation — current state building codes. In addition to the construction objects directly subject to the study of a large amount of documentation. He stressed that in order to determine the basis of assessment, as a set of methodological approaches, methods and valuation procedures that correspond to a certain type of property value, the purpose of the assessment and the conditions for using its results are taken into account. Based on expert practice, when considering criminal proceedings and cases in courts, this goal, first of all, is the cost indicators of the conclusions of expert studies, and only then — the volume of work performed. He was given an algorithm for researching large objects in the absence of sufficient information in the documentation, since this allows to increase the validity of studies and reduce the time frame for their implementation.

V. V. Ivchenko, forensic expert of the Dnipropetrovsk Research Institute, familiarizing himself with the report entitled "Legal regulation of compensation for damage caused by the deterioration of the quality of soils of agricultural land and improving the methodology for determining the real value of their owners' income", emphasized that in recent years, with the development of the market lease of agricultural land in Ukraine is increasingly a question of determining the amount of real damage caused to landlords from the deterioration of soil cover willow and other useful properties of the leased land to their tenants that arose during the lease. He stressed that when calculating on the basis of market data in accordance with the requirements of normative acts in the field of land valuation, an expert can obtain a reliable result in determining the loss of real (market) value (income) of an agricultural land plot as a result of losses caused to landlords from deterioration in quality the soil cover and other useful properties of the leased land plot by their tenants that arose during the lease.

V. M. Baka, Member of the Expert Council of the All-Ukrainian Union of Land Appraisers NGO, Leading Land Appraiser of the OSCE Higher Education Area, Director of LLC *Institute of Legal Consulting*, presented a report on *The main pricing factors affecting the value of land in the city of Kharkiv* and noted that the main feature of the land plots located within the settlements is that most often the land acts as a "basis", for the placement of real estate or business, without determining the value of which it is impossible to estimate the land, since bring your direction of the overall value of the property. On the basis of the analysis of data on the redemption price of land in the formation of the primary market, taking into account the following main pricing factors: legal (rights and restrictions); the value of the land tax (determined on the basis of normative monetary valuation); a set of spatial factors that form such a factor as a location; administrative (zoning of the territory of the city); physical characteristics and others, the contribution of

the value of land to the total value of real estate for various groups of real estate in Kharkiv was determined. She stressed that the main direction of land reform should be the transfer of land relations to market principles, the creation of a transparent land market, which is part of an objective determination of the real, fair value of land, including for tax purposes. The formation and development of the land market will make it possible to determine the land as the material and financial basis of self-government. Objective definition of the value of land within the settlement will significantly increase revenues to the local budget, which will ensure the development of the territorial community and create conditions for comfortable living in the city.

S. A. Evdokimenko, appraiser of the public organization *All-Ukrainian Union of Land Appraisers*, director of the *Kharkiv Inform Audit* LTD., Candidate of Legal Sciences, has focused attention in the report on the topic *Responsibility of the appraiser for the quality of the prepared report* on the responsibility of the appraiser for improper appraisal of the property and determined in which cases the liability of the appraiser expires and the responsibility of the customer and the user's assessment begins.

O. O. Korobko, business development partner of Uvekon, in a report entitled “Application of automated geostatistical methods for monitoring the value of real estate and identifying property that requires revaluation, on the example of the geographic information system Uvekon,”, noted that for the purpose of permanent the monitoring, analysis and coverage of the dynamics of the real estate market of Ukraine by Uvekon specialists are carried out on a permanent basis analytical researches of various segments of the real estate market of Ukraine. The applied method meets the generally accepted requirements of the National Valuation Standards and provides for the possibility of identifying similarity criteria for comparison objects and applying the necessary correction for the correct comparison of the object being evaluated with the selected comparison objects. He stressed that in the near future, due to the available data on the market capacity, its depth and activity, the term of market exposition, a model for calculating the liquidation value of real estate objects will be implemented.

Discussion of the issues discussed at the round table reflects the general interest of the participants in solving issues concerning:

— legislative regulation of valuation activities; trends in the development of land valuation and independent land valuation in Ukraine;

— estimation of the value of shares of enterprises at the present stage of development of forensic examinations;

— determination of material damage caused to the owner of the property;

— general estimation methods of the cost approach in determining the approximate cost of construction of complex objects, etc.



Participants of the "round table", on April 27, 2018

Information was prepared by I. A. Petrova, Senior Researcher of Kharkiv RIFE, Doctor of Law, Professor

ODESA RIFE OF THE MINISTRY OF JUSTICE OF UKRAINE HOLIDAYS JUBILEE

In June 2018, the Odessa Research Institute of Forensic Examinations of the Ministry of Justice of Ukraine solemnly celebrated the anniversary of the 105th anniversary of the founding of one of the oldest expert institutions of Ukraine and the birthday of one of the founders and the first head of the Odessa Cabinet of Scientific and Judicial Expertise ***Mykola Prokopovych Makarenko***.

To this remarkable date, **the staff of the institute**, **headed by Director A. Ripenko**, **prepared a number of significant events.**

Thus, **on June 12**, 2018, according to the order of Odessa Mayor G. Trukhanov from 08/05/2018 No 346 at the main building of the Institute, building number 21 on the street Lanzheronovskaya, MP set up a memorial plaque. Makarenko, whose honorable opening was made by the Chief of the Main, regional department of justice in the Odessa region R. Sauliak, the Odessa Judicial Expertise Research Institute of Ukraine, the Ukrainian Justice Ministry, A. Ripen and the great- the grandson of M. Makarenko — I. Rublev.



Opening of the memorial plaque dedicated to M. P. Makarenko

All those present at the event, with the opening of the memorial, marked the role of Mykola Prokopovych, who created the institution's name for many years and raised the barrier of the institution both by the level of expert research carried out by highly skilled personnel the institution and research developments for practical use by the specialists.



The team of Odesa RIFE at the opening of the memorial plaque dedicated to M. P. Makarenko

June 15–16, **an international scientific-practical conference "Urgent issues of forensic expert activity"**, **was** held by the staff of the institute. *Formation — Development — Achievements*, which spoke many pleasant words and wishes in the speeches and was sent to the jubilee.



Speech by 154–178. S. V. Kivalov

The congratulations were given by the President of the National University "Odessa Law Academy", on the basis of which the conference was held, SV Kivalov, Director of the Department of Judicial and Bankruptcy of the MOJ of Ukraine Yu. O. Moiseev, Director of the Department of Justice and National Security of the MOJ of Ukraine O. M. Oliynyk, Chief of the Main Territorial Department of Justice in Odesa Oblast RV Saulyak, Directors of the Research Institutions of Forensic Examination of the Ministry of Justice of Ukraine, Deputy Director of the State NDECC of the Ministry of Internal Affairs Ukraine K. V. Dubonos, Head of the Main Territorial Department of Justice in the Mykolayiv Region R. I. Wozniak, Head of the Main Territorial Department of Justice in the Kirovograd region V. V. Hutsul, Head of the CU "Odessa Regional Bureau of Forensic Medical Examination", G. F. Kryvda, head of the department of expert activity of the state border guard services of the Southern Regional Department of the State Border Guard Service of Ukraine O. Tsybulskaya, other respectable guests.



Speech by A. I. Ripenko

Representatives of Moldova, Belarus and Poland responded to the invitation of the leadership of the Odessa Research Institute of the Ukrainian Ministry of Justice.



Conference participants

As part of the conference, the director of the National Center for Forensic Examination under the Ministry of Justice of the Republic of MoldoV. A. O. Kataraha and the director of the Odessa Research Institute of Forensic Expertise of the Ministry of Justice of Ukraine A. Ripenko signed the Agreement on cooperation in the field of forensic expertise and discussed issues of international relations with the heads of expert institutions of other countries.

Honorary guests of the event were present at the conference veterans and former employees of the Institute, who were thanked by the Odessa Scientific Research Institute.

The state of development of scientific heritage, urgent problems and issues existing in forensic expert practice, ways of their solution also did not remain unnoticed and were covered in the reports.



Speech by O. Kataraha

Today, the staff of the Institute is expanding. Specialists are mastering new specialties and continuing research development both in general and in specialized areas. Judicial experts conduct preventive and methodological work with citizens and other participants in the process. The priorities of the Institute are determined, new specialists are trained and the working experts are constantly upgrading their qualification level.

The names of specialists and the names of specialties are changing, but the objective of the Odessa Scientific Research Institute of the Ministry of Justice of Ukraine remains unchanged — proper and modern expert support of justice, part of which are the representatives of the institution of forensic examinations of Odessa.

Information was prepared by Ya. I. Dzhubran, academic secretary of the Odessa Research Institute of Forensic Expertise.

INTERNATIONAL ACADEMIC CONFERENCE PERSPECTIVES OF PARTNERSHIP OF MEMBER STATES OF THE SHANHAI CO-OPERATION ORGANIZATION IN THE FIELD OF FORENSIC SCIENCE

On June 20–21, 2018, the International Scientific and Practical Conference “Perspectives of the Partnerships of the Member States of the Shanghai Cooperation Organization in the field of forensic expertise”, was held in Almaty, Republic of Kazakhstan, in which scientists and practitioners in the field of forensic expertise took part, law enforcement and specialist representatives, lawyers, notaries and others.



Conference participants

The greetings to the participants of the conference were addressed by Director of the Department of Expert Activities of the Ministry of Justice of the Republic of Kazakhstan A. E. Umbetaliev, Director of the Center for Forensic Examination of the Ministry of Justice of the Republic of Kazakhstan N.G. Imithenov, Chairman of the Republican Bar Association, Candidate of Law A. K. Tugel and General Director of the Academy of Forensic Expertise of the People's Republic of China, Professor Wu Hejian.

Within the framework of the conference, the ceremony of signing an agreement on cooperation between the Republican State Treasury Enterprise “Center for Forensic Examination of the Ministry of Justice of the Republic of Kazakhstan”, and the Kharkiv Research Institute of Forensic Expertise, which provides for cooperation in the field of research, creation and development of existing methods, methods of expert research, exchange experience of expert practice, mutual internships, etc.



Signing the contract

The work of the conference was initiated by the Deputy Director for Forensic Expert Issues of the Center for Forensic Examination of the Ministry of Justice of the Republic of Kazakhstan R. A. Akbarov with a report on ways of developing the forensic expert system in the Republic of Kazakhstan. General Director of the Academy of Forensic Expertise of the People's Republic of China, Professor Wu Hejian devoted his report to the analysis of the demand for the development of forensic science and technology. The report on some issues of optimization of forensic activities was made by the head of the information and publishing department of the Russian Federal Center for Forensic Examination under the Ministry of Justice of the Russian Federation, ***O. A. Krestovnikov***, Candidate of Laws. The head of the judicial computer-technical and video-phonoscope examination department of the Republican Center for Forensic and Forensic Examination of the Ministry of Justice of the Republic of Tajikistan AKK Aydarbekov in his report highlighted the issue of counteracting terrorism and extremism in the Republic of Tajikistan.

The presentations of achievements and scientific research in the field of forensic expert analysis of scientists of the Kharkiv Research Institute of Forensic Expertise are dedicated to the report of the Deputy Director on Scientific Work of the Kharkiv Scientific Research Institute, Doctor of Law, and senior researcher E. B. Simakova-Yefremian. The head of the laboratory of the Kharkiv Scientific Research Institute, the candidate of legal sciences, V. V. Khosha reported on the introduction of the results of the research work of the Kharkiv Research Institute of Forensic Expertise into the practice of forensic examination.



Speech by Simakova-Yefremian

The organization of training of scientific personnel of higher qualification in the field of forensic expertise in the Republic of Belarus at the present stage is dedicated to the report of the Chief of the Scientific and Practical Center of the State Committee of Forensic Examinations of the Republic of Belarus, candidate of law sciences I. A Moroz and the rector of the Institute for Advanced Training and Retraining of the State Committee forensic examinations of the Republic of Belarus, Candidate of Legal Sciences, Docent I. ***O. Lapina***. Deputy Chief of the Organizational and Inspection Department of the Main Directorate for Coordination of the Official Activities of the Central Apparatus of the State Committee of Forensic Examination of the Republic of Belarus, Candidate of Legal Sciences, Docent ***N. V. Shakel*** focused attention on the criteria for distinguishing between legal and specialist expertise in the field of research on intellectual property. The director of the Higher School (Faculty) of the Law of the Kazakh Humanitarian Law University named after M. S. Narikbayev, Candidate of Legal Sciences, Associate Professor ***S. H. Pen***. Professor of the Department of Criminalistics at the Institute of Law of the Bashkir State University, Executive Director of the Ural-Volga Association of Forensic Experts, Doctor of Law F. G. Aminev devoted a report on some issues of organizational support to forensic activities in the Republic of Kazakhstan and the Russian Federation. A research report by the Deputy Director for Scientific Issues of the Center for Forensic Examination of the Ministry of Justice of the Republic of Kazakhstan ***H. Zh. IertaieV. A.*** was devoted to the research work as a condition for improvement of forensic expert activity in the Republic of Kazakhstan. ***G. S. Sidikova***, lawyer of the East Kazakhstan Bar Association, reported on some of the developmental issues and prospects of the SCO member states' partnership in civil, administrative and criminal cases. The system improvement of quality control of forensic examination at the present

stage is devoted to the report by Deputy Director for Forensic Medicine of the Center for Forensic Examination of the Ministry of Justice of the Republic of Kazakhstan ***N. E. Imambaeva***. ***B. R. Abdeldinov***, Chairman of the Board of the Republican Chamber of Forensic Experts, reported on the formation of the Chamber of Court Experts in the Republic of Kazakhstan. ***A. K. Bekmaganbetov***, director of the Institute of Forensic Expertise in Pavlodar Oblast, has dedicated the international cooperation as one of the factors of improvement of forensic expertise. Director of the Research Institute for Forensic Expertise of the Center for Forensic Examination of the Ministry of Justice of the Republic of Kazakhstan, candidate of philological sciences D. Deuletkeldikizy considered in his report some issues of study of foreign experience of forensic expert activity in the framework of research objects of religious content. ***L. F. Paramonova***, Chief Expert of the Institute of Forensic Expertise in Pavlodar Oblast, made a report on cooperation in the field of forensic examination in the SCO member states as a new stage of development. Chief Expert of the Office of Control and Coordination of Forensic Examination of the Center for Forensic Examination, candidate of medical sciences Zh. B. ZagitoV. A. reported on the current state and prospects for the further development of forensic psychiatry and narcology in Kazakhstan. ***A. E. Swankulov***, deputy director of the Institute of Forensic Examination in Almaty, reported on linguistic knowledge in the forensic examination. In his report, Chief Expert of the Institute of Forensic Examination in Almaty, ***D. Sh. Musina***, considered the prospects of forensic environmental expertise in cases related to the unauthorized extraction of minerals. The question of the forms of conclusions during the conducting of forensic examination is devoted to the report of the Director of the Institute for Forensic Examination in the Almaty region I. Zh. Ismailov.

After the event, the participants of the conference visited an exhibition of laboratory equipment for research on various types of forensic examinations. According to the results of the conference, an appropriate collection of materials was published.

Information was prepared by V. V. Khosha, Head of the postgraduate department of Kharkiv RIFE, Candidate of Legal Sciences.

14th INTERNATIONAL CONGRESS CRIMINALISTICS AND JUDICIAL EXPERTOLOGY: SCIENCE, EDUCATION, PRACTICE

On September 13–15, 2018, 14th International Congress “Criminalistics and Forensic Expertise: Science, Education, Practice”, was held at the National University “Odessa Law Academy”. The event was organized by the Lithuanian Criminalist Society, the National University “Odessa Law Academy”, the International Congress of Criminologists, the University of

Mykolas Romeris (Lithuania), the Center for Forensic Examination of Lithuania. The congress was attended by scientists and practitioners in the field of forensics and forensic expertise who discussed the major issues of theory and practice: the process of globalization, the internationalization of crime and the harmonization of scientific inventions in the field of forensics and forensic examination, increasing the effectiveness of methods of investigating certain categories and types of crime, tactical and technical techniques and means of special knowledge as an instrument for the implementation of scientific achievements in the pre-trial investigation of crimes and their judicial discussion questions of various expert studies the problem of improving methods and techniques of training in criminology and forensic expert study in higher education.



Flag of Congress

The plenary session of the Congress was opened by the President of the National University *Odessa Law Academy* ***S. Kivalov***. He emphasized the importance of this event, in which prominent scholars and leading experts in the field of forensics and forensic experts from Ukraine, Lithuania, Latvia, Poland, the Czech Republic, Greece, Uzbekistan, the United States of America and other countries, who will discuss the most urgent problems of criminology in the global context threats and evolutionary transformations of crime. He also noted that legal education institutions should go a step ahead of the judicial authorities, providing a powerful knowledge base and skills for

students who would seek to apply their professional skills to serve the interests of the state and society.



Congress participants

The next speakers were event organizers. Professor of the University of Mykolas Romeris, Doctor of Law G. Maliewski congratulated all the participants of the Congress on the opening of this event, noting its importance, which is aimed at sharing experience, making joint decisions on the directions of activity, etc. He also emphasized the need for cooperation of forensic experts with prosecutors, investigators, and lawyers, since the findings of the court experts are the main link in the process of investigation (judicial review) and is one of the important evidences.

The head of the Department of Criminology at the Yaroslav Mudry National Law University, Doctor of Law, Professor V. Shepitko noted that previously they met at the International Conference, but this year this event will be held within the framework of the International Congress, since it is about creating a single space for the purpose popularization of criminology and forensic expertise. In the new conditions for the development of society related to counteraction to crime, there is a need to discuss issues of new areas of development in the field of criminalistics and forensic expert studies, as well as issues of teaching criminology and forensic examination in educational institutions. He wished success in this event, the result of which should be the implementation of recommendations that will be developed based on the results of the reports and discussions of the participants of the Congress.



Speech by V. Shepitko

The wishes of fruitful work to all the participants of the Congress were made by the director of the Odessa Research Institute of Forensic Expertise, ***A. Ripenko***, Candidate of Law. The head of the Department of Criminalistics at the National University "Odessa Law Academy", Doctor of Law, Professor V. Tishchenko emphasized the importance of the event and close scientific cooperation of the National University "Odessa Law Academy", with other legal institutions and forensic institutions both in Ukraine and for its outside He noted the latest achievements of the scientists and emphasized the further development of the science of criminalistics by passing the word to the Co-chairman of the Congress of Criminologists, a member of the Lithuanian Forensic Union of Doctor of Law G. Maliewski to award the Congress of Criminologists — the President of the National University "Odessa Law Academy", Doctor of Law, Professor S. Kivalov, Head of the Department of Criminology, National University "Odessa Law Academy", Doctor of Law, Professor V. Tishchenko, Head of the Department Criminalistics of the National Law University named after Yaroslav the Wise, Doctor of Law, Professor V. Shepitko. Also suggested this year to introduce the tradition of congratulations Congress participants who have recently defended

dissertation research. V. Tishchenko wished successive successes to the congressmen and new achievements in order to receive greetings next year in Kaunas (Lithuania), where the 15th International Congress of Criminologists is planned.

At the end of the celebrations, the participants of the Congress made speeches. In the announced report, Doctor of Law, Professor V. Shepitko focused on issues of cybersecurity and forensic means that allow collecting, exploring and using evidence, as well as the relation between forensic and specialist knowledge and changing the tasks of criminology in today's criminological response. The lawyer M. Frishtak from the Czech Republic raised the issue of Islamic phobia, the distribution of information through the Internet in the form of postcards, written in Latin, which Islamists often use in writing, and expressed his opinion on the motivation for such actions. Doctor of Law, professor V. Tishchenko reported on a relatively new object of discussion — forensic strategy in the fight against crime and its place in the system of forensic knowledge. Doctor of Law, Professor I. Soltishevsky from Poland prepared a report on the identification of missing people, and the only missing search center in Poland, the Ithaca Foundation, which provides support and advice in the event of a human being's disappearance. Doctor of Law, Professor V. Kurappka reported on the history of the development of criminology in Lithuania during the years 1918–2018. His speech was supplemented by interesting facts by Dr. M. Matulena, lawyer, regarding the events related to the search for the original Lithuanian Independence Act. Also, Doctor of Law, Professor G. Bushinas (Lithuania) noted the problem of the effectiveness of the investigation in the current legislation.



Speech by Simakova-Yefremian

The second day of the Congress was opened by Doctor of Law, Senior Researcher E. Simakova-Yefremian (Ukraine) with a report on the latest achievements of the Hon. Prof. M. S Bokarius Kharkiv Research Institute of Forensic Examinations, prospects for the development of certain areas of activity, in which he focused on issues of regulatory and legal regulation of forensic expert activity in Ukraine.

The lawyer B. Aliev from Uzbekistan has focused on the main areas of struggle against religious extremist activity. R. Tamoshynayite spoke about the current problems concerning the handwritten examination in Lithuania. The report of the candidate of jurisprudence, senior researcher M. Shepitko (Ukraine) was devoted to the problems of the creation and use of automated systems in the work of professional participants in legal proceedings, which carry out pre-trial investigation or judicial review. Attention was drawn to the impact of such automated systems on countering crimes against justice. Doctor of Law ***V. Terekhovich*** from Latvia devoted his report to problematic issues that arise during investigative actions, in particular, during the review of the place of the event. Doctor of Law, professor ***V. Shevchuk*** (Ukraine) in his report emphasized the issues of formation of tactical operations in criminology, noting the urgency of creating a separate theory of tactical operations, because today the investigative tactics does not meet the needs of practice. The doctor of law ***R. Kipuras*** (Greece) focused on the problems of graphological examination, focusing on the comparative method in the study of counterfeit signatures in the will. Doctor of Law, Professor ***Yu. Chornous*** (Ukraine) noted the necessity of international cooperation in the field of forensic expert activity, paying attention to the necessity of improving the legal regulation of forensic expert activity, expanding the range of solved expert tasks, strengthening the substantiality of expert conclusions and developing expert methods in accordance with international standards. Candidate of Legal Sciences, Senior researcher G. AvdeyeV. A. (Ukraine) has focused on the analysis of legislation on the regulation of forensic expertise in Ukraine and proposed ways to implement the principle of competition and equality of parties in the use of specialist knowledge in criminal proceedings. The report of the Candidate of Legal Sciences ***L. SvyrydoV. A.*** (Ukraine) was devoted to the problematic issues of the development of judicial linguistic expertise in Ukraine, the emphasis was placed on the need to develop separate methods for solving expert problems and discussion issues arising in expert practice. ***I. Polishchuk*** (Ukraine) made a report on the illegal use of trademarks in Ukraine, disclosing the relationship between the method of a crime with economic consequences for the victim (the trademark owner).



Speech by L. Svyrydova

The third day of the Congress was also fruitful. Candidates of jurisprudence I. Shepitko (Ukraine) concerning the technology of conducting systemic criminal proceedings in criminal proceedings, candidate of legal sciences, assistant professor V. Alexeyuchuk (Ukraine) concerning the forensic methodology of criminal proceedings, candidate of legal sciences, associate professor M. Kapustin (Ukraine), describing the mechanism of iatrogenic crimes, the candidate of jurisprudence E. Demidov (Ukraine) about the place of forensic examination in forensic expert activity and other members of the Congress, outlining the most important tests modern criminology and forensic expert study. Summing up the work, the participants expressed their hope for the next meeting in Kaunas (Lithuania).

The reports of the Congress participants were published in the two volumes entitled “Criminalistics and forensic expert studies: science, education, practice”. The 14th International Congress of Criminologists took place at a high modern scientific level and attracted the attention of criminologists and practitioners from 17 countries of the world.

Information was prepared by L. V. Svyrydova, Head of the Laboratory of Kharkiv Research Institute of Forensic Expertise, Candidate of Legal Sciences

INTERNATIONAL SCIENTIFIC-PRACTICAL CONFERENCE ACTUAL PROBLEMS OF JUDICIARY EXAMINATION AND CRIMINALISM DEDICATED TO THE 95TH ANNIVERSARY OF THE CREATION OF M. S. HON. PROF. M. S. BOKARIUS KHARKIV RESEARCH INSTITUTE OF FOTRNSIC EXAMINATIONS

October 10–11, 2018, the Kharkiv Research Institute of Forensic Experts hosted the International Scientific and Practical Conference "Current Issues of Forensic Examination and Criminalistics", devoted to the 95th anniversary of the founding of the institution.



Conference participants in the conference room

The conference discussed:

– normative-legal regulation of forensic expert activity in Ukraine: problems and ways of their solution;

– problems and trends of criminology at the present stage of its development;

– topical issues of the theory of forensic examination;

– theoretical and legal problems of introduction of international standards in the activity of forensic expert institutions of Ukraine;

– problems of scientific and methodological and informational support of forensic expert activity;

– use of innovative technologies in the development of methods of conducting certain types of expertise;

– improvement of professional training of forensic experts on the basis of a professional model of subjects of forensic expert activity;

– theoretical and applied problems of monitoring the state of violations of the principles of expert activity and standards for the protection of human rights and freedoms;

– current state and prospects of development of expert didactics;

– international cooperation in the field of forensic examination.



Conference participants

The conference was attended by over 200 people, among them: representatives of the Ministry of Justice of Ukraine, other bodies of state power and local self-government, judicial and expert institutions of the Ministry of Justice of Ukraine (Kharkiv, Kyiv, Odessa, Donetsk, Lviv, Dnipropetrovsk Research Institutes of Forensic Expertise, Research Center for Forensic Expertise on Intellectual Property), the Ministry of Internal Affairs of Ukraine, the Ministry of Health of Ukraine, higher educational institutions and scientific institutions of the law enforcement agencies, public and other organizations of Ukraine, judicial expert institutions of the Republic

of Armenia (National Bureau of Expertise of the Academy of Sciences of the Republic of Armenia), Republic of Belarus (State Institution "Scientific and Practical Center of the State Committee of Forensic Examination of the Republic of Belarus"), the Republic of Latvia Latvian Attorneys at law, Latvian University), the Republic of Lithuania (Center for Forensic Examination of the Republic of Lithuania), the Republic of MoldoV. A. (National Center for Forensic Examination under the Minister) the Republic of Kazakhstan (Center for Forensic Examination of the Ministry of Justice of the Republic of Kazakhstan and its regional institutions), the Republic of Poland (Central Expert Laboratory of the Police Warsaw); The Institute of Forensic Examination of the Republic of Poland (Ministry of Justice of the Republic of Poland, Krakow), Romania (National Institute of Forensic Examination of Romania), Republic of Tajikistan (Republican Center for Forensic and Forensic Examination under the Ministry of Justice of the Republic of Tajikistan), etc. Altogether about 120 reports and scientific reports were received at the conference.



During the performance of the hymn of Ukraine

The conference was opened by the director of the Kharkiv Research Institute of Forensic Expertise, Doctor of Law, Professor, Honored Lawyer of Ukraine O. M. Kliuiev, who greeted the audience, thanked the scientists and practical workers for their participation in the conference.



Speech by O. M. Kliuiev

Deputy Minister of Justice of Ukraine, Doctor of Law S. V. Hlushchenko noted that such conferences play an important role for practitioners and theorists and wished all participants of the conference creative inspiration and success on their scientific way.



Congratulations by S. V. Hlushchenko

Rector of Yaroslav Mudry National Law University, Academician of the National Academy of Sciences of Ukraine, academician of the National Academy of Legal Sciences of Ukraine, Doctor of Law, Professor, Honored Worker of Science and Technology of Ukraine, State Prize Laureate, Hero of Ukraine V. Ya. Tasiy congratulated the staff of the Institute and others. participants of the conference with a significant date and wished further success in scientific and expert activities.



Congratulations by V. Ya. Tasiy

I. O. Terekhov, the First Deputy Mayor of the Kharkiv City Mayor, congratulated the staff of the institute on the new stage of development, noted the relevance of the planned speeches of the conference participants and wished them successful work.



Congratulations by I. O. Terekhov

Member of the Presidium of the National Academy of Sciences of Ukraine, Head of the North-Eastern Scientific Center of the National Academy of Sciences of Ukraine and the Ministry of Education and Science of Ukraine, Academician of the National Academy of Sciences of Ukraine, V. P Semynozhenko congratulated the staff of the Institute on the commencement of the conference, identifying the significant contribution of scientists and experts to the rule of justice in Ukraine, and presented the awards of the NAS of Ukraine to the managers and employees of the institute.



Congratulations by V. P Semynozhenko

Representatives of other bodies of state power, local self-government, law-enforcement bodies, higher education institutions, judicial-expert institutions and others also spoke with congratulations.



Greeting of the prosecutor of the Kharkiv region Yu. B. Danilchenko

During the official part of the conference, there were procedures for signing cooperation agreements between the Hon. Prof. M. S Bokarius Kharkiv Research Institute of Forensic Examinations and forensic institutions of the Republic of Poland, the Republic of Lithuania, Romania. The agreements provide for bilateral cooperation in the field of research, creation of new and improved existing methods and techniques of expert research, exchange of experience in expert practice, mutual internships, etc.



Signing an agreement with the Institute of Forensic Examination of the Ministry of Justice of Poland



Signing an agreement with the Central Police Experimental Laboratory of Poland

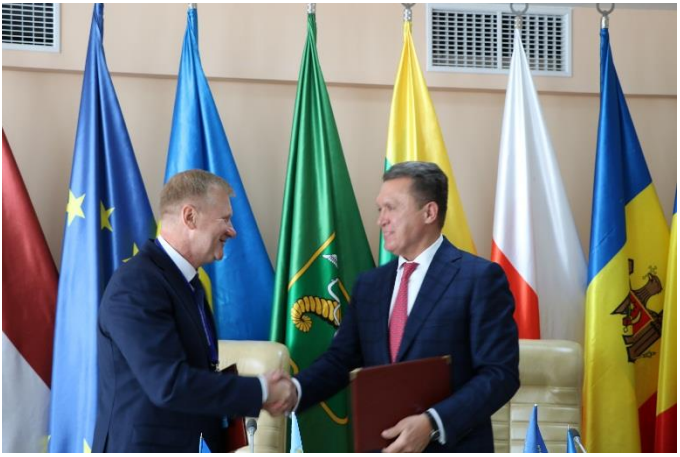


Signing an agreement with the Center of Forensic Examination of the Republic of Lithuania



Signing an agreement with the National Institute of Forensic Examination of Romania

Also signed cooperation agreements with the State Scientific Institution "Scientific-technological complex", Institute of Single Crystals "of the National Academy of Sciences of Ukraine", and the Kharkiv National Pedagogical University named after G. S. Skovoroda.



Signing an agreement with the DNU "Scientific and technological complex", Institute of Single Crystals "of the National Academy of Sciences of Ukraine»

After the official part of the conference, participants' speeches began. The greatest interest was caused by the reports by O.M. Kliuiev, the director of the Kharkiv Scientific Research Institute "International Standards and International Cooperation in the Field of Forensic Expertise in Ukraine"; V. Yu. Shepitko, Head of the Department of Criminalistics at Yaroslav the Wise National Law University "Using Special Knowledge in Criminal Proceedings: Contemporary Trends and Some Problems"; D. Dauletkeldikizy, Director of the Research Institute for Forensic Expertise of the Center for Forensic Examination of the Ministry of Justice of the Republic of Kazakhstan "Current state and prospects of development of forensic expert activity in the Republic of Kazakhstan"; V. M. Shevchuk, Professor of the Department of Criminology, Yaroslav the Wise National Law University "Actual Problems of the Methodology of Criminology"; V. Cheglarsky, forensic expert of the Central Experimental Police Laboratory (Warsaw) "FAVI System as an International Instrument for Combating Transport Crimes"; K. Biskup, forensic expert of the Central Experimental Police Laboratory (Warsaw) "Use of electronic and magnetic diagnostic devices for the identification of vehicles and working vehicles"; O. Kataraghi, Director of the National Center for Forensic Examination of the Republic of Moldova (co-authored with P. Petkovych, Deputy Director for Scientific Work of the National Center for Forensic Examination of the Republic of Moldova) "Some aspects of the study of copies of hand-drawn objects".

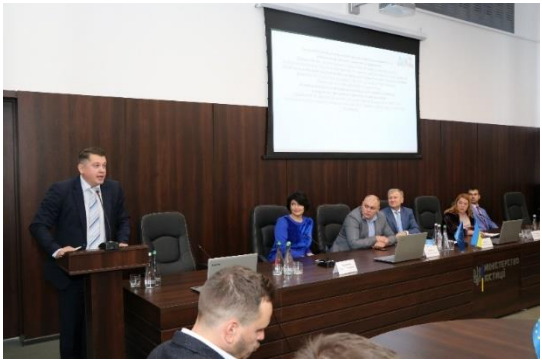
The second day of the conference was held on the basis of Hon. Prof. M. S. Bokarius Kharkiv Research Institute of Forensic of Forensic Examination. After familiarization with the foreign participants of the

conference with the work of the Institute, its updated laboratories, modern equipment, after the dialogue with the employees of the institution on the issues of interest, the work of the conference was continued at the plenary meeting.



Participants of the plenary session in the Kharkiv Scientific Research Institute

The reports were delivered by V. V. Yusupov, a leading researcher at the National Academy of Internal Affairs (co-authored with E. B. Simakova-Yefremian, Deputy director for the scientific work of the Kharkiv RIFE) *Stages of the development of Hon. Prof. M. S Bokarius Kharkiv Research Institute of Forensic Examinations*; M. V. Danshin, deputy dean for the scientific work of the Faculty of Law of VN Karazin Kharkiv National University (co-authored with T. Y. Kaganovsky, dean of the Faculty of Law of VN Karazin Kharkiv National University) "*Actual issues of teaching, the course of criminology at the law schools of classical universities*".



Speech by M. V. Danshin

***M. H. Scherbakovskyi**, Professor of the Department of Criminal Law Disciplines of the Kharkiv National University of Internal Affairs "Expert on the Law — a New Member of the Judiciary"; V. P. Korzh, professor of the department of criminal-law disciplines of the Kharkiv National University of Internal Affairs "Situational Approach to the Use of Special Knowledge in the Method of Investigation of Economic Crimes"; K.V.Makhankov, State Scientific-Practical Center of the State Committee of Forensic Expertise of the Republic of Belarus "Using scanning electron microscopy and X-ray microanalysis for expert examination of toners of electrographic printing"; A. I. Ripenko, director of Odesa Scientific Research Institute of Informatics and Informatics "Cryptology and Forensic Expertise: Point of View, Future Prospects";*



Speech by A. I. Ripenko

A. E. Shchudro, forensic expert of Dnipropetrovsk NDECTS of the Ministry of Internal Affairs of Ukraine "Theoretical and practical aspects of etching of alloys on the basis of iron for revealing relief signs and hidden welds"; V. O. Gorbenko, Chief Judicial Expert of the Kharkiv NDECC of the Ministry of Internal Affairs of Ukraine (co-authored with I.G. Zavadovyeva, Head of the Kharkiv NDECTS Department of the Ministry of Internal Affairs of Ukraine and O. M. Dyachenko, chief judicial expert of the Kharkiv NDECC of the Ministry of Internal Affairs of Ukraine) "The essence of errors in expert conclusions"; V. I. Golobotovsky, Senior Forensic Expert of the Transcarpathian NDECC of the Ministry of Internal Affairs of Ukraine (co-authored with V. V. Areshonkov, Ph.D. student of the National Academy of Internal Affairs) "Automated information retrieval system", Streletsky rifled firearm and ammunition to it ": the concept of creation and further using". Each speech was accompanied by a lively discussion of issues highlighted by speakers.

The discussion of the issues discussed at the International Scientific and Practical Conference "Current Issues of Forensic Examination and Criminology", dedicated to the 95th anniversary of the institution's establishment, reflects the general interest of the participants in the strengthening and further development of the interstate cooperation of forensic expert institutions, improvement of organizational, scientific, methodological, scientific -experimental, expert work. The speeches of the conference participants contain the following suggestions and recommendations:

1. In the course of scientific research to pay special attention to the formation of a modern system of scientific support of the methodological basis of forensic examination in accordance with the provisions of the theory and principles of the formation of expert research methodology using mathematical methods, simulation modeling as an element of forensic expertise. This will greatly increase the probative value of expert studies.

2. To promote cooperation between expert institutions of Ukraine and expert institutions of the EU countries taking into account the requirements of international standards. To direct the activities of forensic institutions to ensure human rights and freedoms and the implementation of just justice in Ukraine.

3. To take into account that the efficiency of forensic-expert activity depends on the implementation of innovative technologies in educational and research processes, the result of which is the formation of an effective organizational model of expert institutions. This determines the need for detailed analysis and involvement in the expert work of contemporary views on the development of the theory of forensic examination, the main characteristics of scientific knowledge, as well as the peculiarities of the formation of this activity within the framework of integration into European expert science.

4. To carry out scientific researches concerning historical sources, patterns of emergence of expert studies, as branches of applied legal science. Taking into account the above, determine the current trends in the formation of the latest terminological system of forensic expertise and prospects for improving the practice of forensic expertise regarding the use of special knowledge in the legal process at the stage of reforming the legislation of Ukraine.

5. In order to improve the professional training of forensic experts, ensure the formation of a scientifically grounded model of coordination of the process of training and advanced training of court experts on the basis of a professional model of subjects of forensic expert activity.

6. In order to improve the quality of training and retraining of staff it is expedient to consider the following measures:

First, to reproduce in a new quality and with fundamentally new tasks a centralized system of retraining and advanced training of forensic experts and other specialists working in the field of forensic examination on the basis of leading research institutes of forensic examinations of the Ministry of Justice of Ukraine.

Secondly, in the system of studying in institutions of higher education, it is necessary to solve the issue of training of professional forensic experts, including higher qualification (masters), and doctors of philosophy and doctors of sciences on the basis of the KhRIFE, having foreseen a state order for their preparation.

Thirdly, with a view to ensuring a unified approach to the training of forensic experts, it is necessary to eliminate the differences existing in these issues in the state specialized forensic institutions and expert departmental services.

Fourthly, to make continuously an active element of training and professional development of personnel, especially highly skilled, their training, internship and advanced training (including in foreign higher education institutions and research centers).

Fifthly, for the successful functioning of the system of training and advanced training of personnel, develop common types of training curricula for the training of forensic experts (regardless of their departmental affiliation) and include them in appropriate training manuals adapted to the activities of forensic institutions of various organizational and legal forms, including forms of ownership.

Sixth, the training of judicial experts should be mandatory for representatives of business entities involved in forensic expertise.

7. To form a modern system of expert prevention, as a component of the system of counteraction to crime, to carry out scientific support for monitoring the state of violations of the principles of expert activity regarding independence, impartiality of the standards of expert activity and determination of factors for the commission of offenses in order to minimize the impact on the judicial expert, limiting interaction with process participants, ensuring its real security.

8. The solution of the problems of expert justice in Ukraine is aimed at further development of the theory and methodology of forensic examination and criminalistics, including in the field of cryptology, tokens circulation, the ratio of artificial intelligence and special knowledge.

9. To implement a unified approach while conducting forensic examinations using modern scientific and technical achievements. To this end, to generalize international experience in the field of forensic expertise in standardization, accreditation and certification, the development and systematization of European and interstate standards, ensuring unity of

measurement, the formation of a unified search and data transmission system for further use in conducting forensic examinations.

10. Continuously pay attention to the integration of efforts for the implementation of research results, the establishment of scientific contacts and the expansion of creative connections through joint conducting of methodological and research work. To work out the issue of realization of general theoretical-legal and methodical principles of conducting a complex examination with the definition of its subject, indications allowing to distinguish a complex examination from a complex of various examinations, drawn up in a single conclusion.

11. The tendencies of further development of criminology to orientate on the definition of its place in the legal sciences, the development of the theoretical basis for the use of non-traditional methods for investigating crimes (biorhythmology, hypnology, drug analysis, polygraphology, kinesics, etc.).

12. Consider the problems of detecting and investigating offenses as an independent direction of scientific research, which, due to the creation of appropriate methodological and forensic recommendations, should substantially compensate for the imperfection of the legal framework, the lack of a clear understanding of the norms governing social relations and the practice of their application, significantly increase the effectiveness of law enforcement activities.

13. Based on the study and critical analysis of the works of leading scientists in the field of criminal process and criminalistics, it is expedient to develop a classification of types of particularly dangerous crimes (including terrorist and economic orientation) and determine the place of their investigation methods in the very structure of the classifications of forensic techniques as a complex method with further justification.

14. Take measures to develop forensic technics, taking into account progress in various fields of science and technology, their interrelations and interactions with the needs of investigative, expert, operative-search and judicial practice.

15. To consolidate efforts to solve the problems of financing of state specialized forensic institutions related to the issues of providing them with modern equipment used in scientific and expert research, in particular, acquisition of the latest devices, equipment, hardware and software complexes, etc.

According to the results of the conference, an appropriate collection of materials was published.

The information was prepared by H. O. Spitsyna, the head of the laboratory of the Kharkiv Scientific Research Institute, the doctor of legal sciences, the assistant professor and O. F. Dyachenko, the candidate of Technical Sciences, Senior researcher

INTERNATIONAL SCIENTIFIC CONFERENCE "HISTORY AND PRESENT FORENSIC EDUCATION", DEVOTED TO THE 15TH ANNIVERSARY OF THE INSTITUTE OF TRAINING AND RETRAINING STATE COMMITTEE OF EXPERTISE COURT OF THE REPUBLIC OF BELARUS

On October 25–26, 2018, the International Scientific and Practical Conference "History and Contemporary Forensic Expert Education", was held in Minsk, Republic of Belarus, dedicated to the 15th anniversary of the Institute for Advanced Studies and Retraining of the State Committee of Forensic Examination of the Republic of Belarus, which took place Participation of scholars and practitioners — representatives of forensic institutions, higher educational establishments, law enforcement agencies, etc.

The congratulatory speech addressed the participants of the conference was the head of the State Committee of Forensic Examination of the Republic of Belarus, Major-General of Justice, Ph.D., Associate Professor ***A. I. Shved*** and Rector of the State Institution of Education "Institute for Advanced Training and Retraining of the State Committee of Forensic Expertise of the Republic of Belarus", Candidate of Legal Sciences, Associate Professor ***I. O. Lapina***.



Speech by A. I. Shved

The plenary session of the conference was initiated by the Director of the Institute of Forensic Expertise, Head of the Department of Forensic Examination of the Moscow State Law University. O. Kutafina (MDUA), Doctor of Law, Professor O. R. Rossinsky with a report on the history, current state and prospects of preparation of forensic experts in the Russian

Federation. Modern approaches to training forensic experts in the system of forensic institutions of the Ministry of Justice of Russia was considered in his report by the Deputy Director of the Federal Budget Institute "Russian Federal Center for Forensic Examination under the Ministry of Justice of the Russian Federation, Professor of the Department of Forensic Expertise of the Law Institute of the Russian University of Friendship of Peoples, Doctor of Law, Associate Professor G. G. Omelianyuk. Director of the National Center for Forensic Examination under the Ministry of Justice of the Republic of Moldova, doctoral student O. S. Kataraha, in his report, addressed the actual issues of the conduct of forensic examinations. Concerning the problematic issues of conducting a study of the text of scientific works in order to establish their authorship, a report by the chairman of the Higher Attestation Commission of the Republic of Belarus, Doctor of Legal Sciences, Associate Professor ***O. E. Guchka*** is devoted. Senior expert of the Accounting Expertise Department of the Bureau of Expertise of the Forensic Department of the State Police of Latvia, Master of Economics Yu G. G. Lidorov reported on the necessary skills and personal characteristics of a judicial expert-economist. The use of models for evaluating willful bankruptcy in forensic examinations is dedicated to the report of Professor of the Department of Innovation and Enterprise Management of the Faculty of Engineering Economics and Management of the Riga Technical University, Doctor of Economics, Professor ***I. S Voronova***. On forms of preparation of forensic experts in the post-Soviet space was mentioned in the report of the Head of the Department of Criminology and the Criminal Procedure of the State Educational Institution of Higher Education of the Moscow Region "State Social-Humanitarian University", Doctor of Law, Associate Professor O. V. IvanoV. A. and Associate Professor of the Department of Criminalistics and the Criminal Procedure of the State the educational institution of higher education in the Moscow region "State Social-Humanitarian University", candidate of law sciences, associate professor ***O. G. Dyakonova***. The issue of training of experts is devoted to the report of the senior researcher of Kharkiv Research Institute ***S. H. Hasparian***, who focused on the necessity of expanding contacts by training experts in other expert institutions of Ukraine, countries of the near and far abroad, promotion of international cooperation in the field of forensic examination within the framework of agreements, concluded between judicial and expert institutions of Ukraine and other countries, etc. Head of the postgraduate department of Kharkiv Scientific Research Institute of Applied Sciences, candidate of jurisprudence V. V. Khosha drew the attention of those present to some issues of improving the quality of training of scientific personnel of higher qualification for forensic expert institutions, namely: obtaining a license from Kharkiv NIISE for educational activities in the field of higher education at the third educational level-acoustic level (preparation of doctors of philosophy) in the specialty 081

"Law" (according to administrative, forensic and forensic expert profiles), the opening of the post-graduate department at the institute and specialized the Academic Council with the right to accept and conduct the defense of theses for obtaining the degree of a candidate of law sciences, etc.



Conference participants

Historical aspects and the current state of forensic expert education in Ukraine were considered by the deputy director of the Kiev Research Institute of Forensic Expertise of the Ministry of Justice of Ukraine, candidate of jurisprudence ***N. V Nestor***. Director of the Research Institute for Forensic Expertise of the Center for Forensic Examination of the Ministry of Justice of the Republic of Kazakhstan, candidate of philological sciences D. Deuleletkedikizy highlighted in his report the issues of improvement and development of forensic expertise in the Republic of Kazakhstan. The issue of the development of the Institute for the use of special knowledge in the context of counteracting crimes related to sexual deviations was devoted to the report by the head of the Department of Criminology at the Educational Institution "Academy of the Ministry of Internal Affairs of the Republic of Belarus", candidate of legal sciences, associate professor M. P. Shrub. Head of the cycle of civil law and criminal-law disciplines of the department of legal disciplines of the Educational Establishment "Military Academy of the Republic of Belarus", candidate of legal sciences, assistant professor ***B. A. Asyonok*** reported on some issues of law enforcement expertise in the administrative process. ***O. S. Kuzmin***, Head of the Department of Forensic Examination of the State Educational Institution "Institute for Advanced Training and Retraining of the State Committee of Forensic Examination of the Republic of Belarus", reported on the preparation of court experts in the

field of marking designation of vehicles. Senior Research Fellow of the Forensic Research Laboratory of the State Institution *Scientific and Practical Center of the State Committee of Forensic Examination of the Republic of Belarus* ***N. O. Vashkevich*** reported on the retraining of specialists in border control. The Head of the Department of Forensic Psychiatry and Psychology of the State Educational Institution "Institute for Advanced Training and Retraining of the State Judicial Committee", reported on the training of specialists in judicial medical, psychiatric and psychological examinations at the State Institution of Education "Institute for Advanced Training and Retraining of the State Committee of Forensic Examination of the Republic of Belarus". Expertise of the Republic of Belarus "candidate of medical sciences, associate professor ***V. V. Holubovych***. Head of the Department of Forensic Medicine of the State Institution of Education "Institute for Advanced Training and Retraining of the State Committee of Forensic Expertise of the Republic of Belarus", candidate of medical sciences, associate professor A. Yu. Krylov in his report considered the issues of training medical experts at the Department of Forensic Medicine of the State Committee of Court "Institute improvement of professional skills and retraining of the State Committee of Forensic Examination of the Republic of Belarus ".

During the conference after the speeches of the participants of the conference, discussions were held. According to the results of the conference, an appropriate collection of materials was published.

Information was prepared by V. V. Khosha, Head of the postgraduate department of Kharkiv RIFE, Candidate of Legal Sciences.

PREPARATION OF HIGHEST QUALIFICATION EXPERTS AT THE HON. PROF. M. S. BOKARIUS KHARKIV RESEARCH INSTITUTE OF FORENSIC EXAMINATIONS

The avant-garde of the scholars of forensic expert institutions has always been the specialists of the highest qualification. Training of specialists of this level in Kharkiv NDISS in 2017–2018 gained a new impetus, which resulted in the protection of dissertations. During this period, 1 doctoral and 5 candidate's theses were protected by the Institute's scientists.

Thesis for a Doctor of Law degree by specialty 12.00.09 — criminal process and forensic science; forensic examination; Operational and investigative activities were defended by the Deputy Director of the Institute for Scientific Work Ella Borisivna Simakova-Yefremian. The defense of the work on the topic "Legal-theoretical and methodological foundations of complex forensic research", took place on October 19, 2017, at the meeting

of the specialized academic council D 64.086.01 at the Yaroslav Mudryi National Law University. Scientific consultant — Doctor of Law, Professor, Academician of the NAPr of Ukraine, Honored Worker of Science and Technology of Ukraine V. Yu. Shepitko. Official opponents were: Doctor of Legal Sciences, Professor, Corresponding Member of the National Academy of Sciences of Ukraine, Honored Worker of Science and Technology of Ukraine VV Tishchenko; Doctor of Law, Professor Yu. M. Chornous; Doctor of Law, Professor, Honored Lawyer of Ukraine B. V. Schur.

The thesis of E. B. Simakova-Yefremian highlighted the developed theoretical-legal and methodological principles of complex forensic-expert studies. The work presents the characteristics of integration processes that take place in the field of forensic examination; outlines their essence, trends and problems, as well as suggested ways of their solution. Particular attention is paid to the application of a systematic approach in conducting complex forensic investigations and, as a result, their classification has been developed. In addition, the author's definitions of the interdisciplinary subject of complex studies in the forensic examination have been reflected in the dissertation; integration object of forensic examination; complex forensic examination; methods of complex forensic research and others. E. B. Simakova-Yefremenian position on the interaction of special knowledge during the conduct of complex forensic expert studies has also been analyzed in the work. a system of elements of a complex forensic examination of material traces-reflections; general methodical approaches to solving problems of complex forensic research; professional and moral-ethical requirements to forensic experts in the course of complex judicial-expert research; concept and circle of subjects of forensic expert activity, etc.

Thesis for a Candidate Degree in Law, specialty 12.00.07 — Administrative Law and Process; finance law; The information law was defended by the head of the laboratory VadymVitaliyovych Khosha. The protection of work on the topic “Theoretical and methodological basis of the judicial automotive expertise”, was held on March 21, 2018, at the meeting of the specialized academic council D 64.700.01 at the Kharkiv National University of Internal Affairs. Scientific supervisor — Doctor of Legal Sciences, Professor, Honored Lawyer of Ukraine O. M. Kliuiev, Director of Kharkiv RIFE. Official opponents were: Doctor of Law, Professor, Honored Worker of Science and Technology of Ukraine E. Y. Barash; Candidate of Law V. R Ostropilets.

The dissertation was devoted to the definition of the essence and peculiarities of the administrative and legal provision of accreditation of forensic expert institutions of Ukraine (hereinafter — CEU). The work reveals the features of the CEU in the law enforcement system and the system of subjects of administrative law, as well as the historical and legal generalization of the formation of CEU as objects of accreditation in Ukraine.

In the course of the dissertation V. V. Khosha established the peculiarities of the accreditation of the CEU of Ukraine as a component of the administrative law subject, analyzed the administrative-legal forms and methods of accreditation of the CEU of Ukraine, determined the administrative and legal status of the accreditation subjects of the CEU of Ukraine and disclosed the content of its elements. The problem of the delineation of administrative and other legal relationships that arise during the accreditation, the legal basis for the accreditation of the SEU of Ukraine and the ways of developing the organizational principles of accreditation of the CEU of Ukraine were also found in the paper. Based on the generalization of the international accreditation experience of CEU, the possibilities of its use in Ukraine were identified and ways of improving the administrative legislation that regulates the accreditation of the CEU of Ukraine were identified.

Thesis for a Candidate Degree in Law, specialty 12.00.07 — Administrative Law and Process; finance law; Information law was defended by the Deputy Director for expert work Alexander Alexandrovych Sviderskyi. Protection of work on the topic "Administrative and legal status of subjects of scientific and scientific and technical activity in Ukraine", was held on October 26, 2017, at the meeting of the specialized academic council D 64.700.01 at the Kharkiv National University of Internal Affairs. Scientific Supervisor — Doctor of Legal Sciences, Professor, Honored Lawyer of Ukraine O. M. Kliuiev, Director of Kharkiv RIFE. Official opponents were: Doctor of Law, Associate Professor O. Yu. Drozd; E. F. Shkrebets, Candidate of Legal Sciences.

O. Sviderskyi dissertation is one of the first attempts under the conditions of reforming the legislation of Ukraine to carry out a comprehensive study of the administrative and legal status of subjects of scientific and scientific-technical activity, to substantiate a number of new scientific provisions and to propose amendments and additions to the legislation. The concept, structure and peculiarities of the legal status of subjects of scientific and scientific-technical activity are defined in the work. The genesis of legal regulation of the status of subjects of scientific and scientific and technical activity is disclosed. On the background of the definition of the subjects of scientific and scientific and technical activities, their classification was made and the essence was established. The characterization of the modern system of legal regulation of the status of subjects of scientific and scientific and technical activity outlines the structure of their administrative and legal status and discloses the content of legal personality as a structural element of the administrative and legal status of subjects of scientific and scientific and technical activity. Alongside with this, the essence of the powers of the subjects of scientific and scientific activity is highlighted, their legal responsibility is characterized, the peculiarities of legal regulation of the administrative and legal status of certain subjects of scientific and scientific

and technical activity are worked out on the basis of which the ways of its improvement are outlined. The dissertation summarizes the foreign experience of administrative and legal regulation of the status of subjects of scientific and scientific and technical activity and proposes directions of its possible use in Ukraine.

Thesis for a Candidate Degree in Law, specialty 12.00.07 — Administrative Law and Process; finance law; The information law was defended by the head of the laboratory Oleh Oleksandrovich Mykhalskyi. Protection of work on the topic "Administrative-legal counteraction to the offense in the field of intellectual property in Ukraine", was held on December 25, 2017, at a meeting of the specialized academic council K 55.051.07 at Sumy State University. The scientific supervisor is Doctor of Law, Professor, Honored Lawyer of Ukraine O.M. Muzychuk. Official opponents were: Doctor of Law, Professor, Honored Worker of Science and Technology of Ukraine E. Yu. Barash; Candidate of Law V. R Ostropilets.

The dissertation provides a comprehensive, generalized level, using modern methods of scientific knowledge, the definition of the essence and peculiarities of the administrative-legal counteraction to the violation in the field of intellectual property in Ukraine, and scientifically substantiated proposals and recommendations for improving its effectiveness. A separate place in the work is dedicated to the description of the implemented historical-legal analysis of the violation in the field of intellectual property in Ukraine, established the essence and content of the state-legal mechanism for counteracting a violation in the field of intellectual property in Ukraine; characterizes the legal principles of counteracting the infringement in the field of intellectual property in Ukraine and discloses the purpose and principles of administrative and legal counteraction to the offense in this area. On the basis of the established levels, directions and circles of counteracting offenses in the field of intellectual property in Ukraine, their forms and methods are determined. The work summarizes the foreign experience of counteracting the infringement in the field of intellectual property and justifies possible ways of its use in Ukraine. In addition, the directions of optimization of the system of counteracting offenses in the field of intellectual property in Ukraine were proposed and proposals on improving the administrative legislation, which provides for responsibility for violations in the field of intellectual property in Ukraine, were worked out.

Thesis for a Candidate Degree in Law, specialty 12.00.09 — Criminal Procedure and Criminology; forensic examination; operative-search activity was defended by the head of the laboratory Andrii Vasylovych Lubentsov. The protection of work on the topic "Theoretical and methodological basis of the judicial automotive expertise", was held on March 21, 2018, at the meeting of the specialized academic council D 64.700.01 at the Kharkiv National University of Internal Affairs. Scientific supervisor — Doctor of

Law, associate professor V. O. Malyarova. Official opponents were: Doctor of Law, Professor MV Danshin; Candidate of Legal Sciences, Docent V. G Drozd.

The work of AV Lubentsov is one of the first in domestic criminology and forensic experts on monographic research of theoretical and methodological foundations of forensic automotive expertise. The dissertation reveals the main features and formulates the concept of judicial auto technical examination and its objects and highlights their main types; outlined the subject and tasks of automotive expertise. On the basis of this, the classification of court automotive expertise has been improved, the peculiarities of the preparation and appointment of forensic automotive expertise have been determined. The analysis of the theoretical basis of the judicial auto technical research made it possible to determine the peculiarities of conducting forensic automotive expertise and evaluation of the expert's conclusion, as well as to provide the basis for the methodology of judicial auto technical expertise. The dissertation established that expert researches in the process of conducting judicial auto technical expertise are based on scientific knowledge and scientific methods from other branches of knowledge, mainly technical, and an algorithm of expert research during conducting of court automotive expert assessments is presented. In addition, the content of forensic expertise in the field of judicial automotive expertise, which is made up of concrete actions related to its organization and conduct, is also highlighted, and the detailed description of the principles of forensic expert activity in the field of automotive expertise is given.

Thesis for a Candidate Degree in Law, specialty 12.00.07 — Administrative Law and Process; finance law; Informational right was defended by the researcher Inna Vladimirovna Sabadash. Protection of work on the topic “Administrative and legal status of forensic experts who are not employees of state specialized institutions”, was held on March 21, 2018, at the meeting of the specialized academic council D 64.700.01 at the Kharkiv National University of Internal Affairs. Scientific supervisor — candidate of legal sciences K. V. Shkarupa. The official opponents were: Doctor of Law, Professor O. V. Dzhafarov; Candidate of jurisprudence G. V. Shevchuk.

The dissertation reveals signs and peculiarities of the administrative and legal status of forensic experts who are not employees of state specialized institutions, describes the legal principles of its acquisition, and presents the identified preconditions for the implementation of the administrative and legal status of these persons. The essence and composition of the elements of the administrative and legal status of forensic experts who are not employees of state specialized institutions are determined, the systematization of their basic rights and obligations is specified; outlined the role and significance of the legal responsibility of forensic experts who are not employees of state specialized institutions. The guarantees of realization of the administrative

and legal status of forensic experts who are not employees of state specialized institutions are singled out, and directions of their improvement are offered. Alongside with this, there are ways to improve the procedure for depriving the status of a judicial expert who is not an employee of a state specialized institution.

The dissertation for the degree of the candidate of economic sciences in specialty 08.00.03 — Economics and management of the national economy was defended by the head of the laboratory ***Olga V. Anishchenko***. The work on the theme "State regulation of river transport of Ukraine", was held on September 26, 2018, at the meeting of the specialized scientific council K 41.119.01 at the Black Sea Research Institute of Economics and Innovation, Odessa. Scientific supervisor — Doctor of Economics, associate professor O. O. Tsvirko. Official opponents were: Doctor of Economic Sciences, Professor, Honored Economist of Ukraine V. G Margasov; Doctor of Economics, associate professor V. V Koval.

The dissertation proposes a new solution to the actual scientific and applied problem of theoretical and methodological research on the development of state regulation of river transport of Ukraine at the present stage of economic development. The author's personal contribution is to substantiate the main problems and trends of the development of domestic river transport and to improve the practical recommendations for the state regulation of river transport of Ukraine, which, unlike the existing, built on the basis of a comprehensive analysis of the main indicators of the dynamics and long-term forecast of economic scenarios for the development of river transport of Ukraine, which, will enable to apply effective public policies and to plan the reasoned measures of river transport regulation in the future by creating appropriate strategies and concepts.

Information was prepared by I. A. Petrova, Senior Researcher of Kharkiv RIFE, Doctor of Law, Professor

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