Technical and Forensic Support at the Initial Stage of Smuggling Investigation

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This paper primarily considers the essence, content and peculiarities of technical and forensic support at the initial stage of investigating crimes involving smuggling. To fulfil this goal, general scientific methods of analysis and synthesis, induction and deduction, as well as special methods: dialectical, system-structural, comparative-legal and method of generalization are implemented. It has been found that technical and forensic support is a set of organisational and technical measures encompassing efficient application of scientific and technical means and methods for the detection, recording, seizure and examination of evidentiary information. Having generalised theoretical approaches and practices in the investigation of criminal offences, the author points out that peculiarities of applying scientific and technical means are conditioned by investigative situations characteristic of smuggling, which in turn determine the algorithm of investigative (search) and covert investigative (search) actions. Prospects for enhancing technical and forensic support for smuggling investigations primarily lie in combining technological innovations, refining methodological approaches, upgrading the skills of pre-trial investigation agencies, expanding material and technical resources, and ensuring proper legal regulation of the use of scientific and technical means. Only the integration of these factors can ensure the accuracy, promptness and probative value of both results obtained from investigative and other procedural ac-

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tions and forensic examinations in this complex category of criminal offences.

Keywords: *forensic support; pre-trial investigation; initial stage; scientific and technical tool; forensic scientist specializing in criminalistics.*

Research Problem Formulation

The primary goal of criminalistics is to provide law enforcement agencies of any affiliation with theoretical and practical guidelines ensuring effective pre-trial investigations, and with scientific and technical resources facilitating tactical investigation tasks and procedural objectives. In the field of criminal procedural activity, the body of knowledge and skills associated with the use of technical means is traditionally referred to as *technical and forensic support.*

Developing and implementing scientific and technical means is the subject of a separate research section in forensic science: forensic technology. Since the late 19th century, the system of scientific provisions and practical guidelines on the use of technical means has been continuously evolving, merging the latest achievements of the scientific and technical field, forensic theory and related fields of knowledge.

The *technical and forensic support* concept is frequently employed in the context of certain stages or activities (specifically, pre-trial investigation). In turn, *forensic technology* refers to the scientific discipline underpinning the theoretical framework for a corresponding area.

Providing technical and forensic support for investigations makes it feasible to take a holistic approach to a range of tasks, from legal regulation to the organisational, technical, scientific and methodological support of investigative activities. It also involves the development and implementation of state-of-the-art tools, and improvement of existing tools and techniques, and utilization of modern techniques for detection, recoding, seizure and examination of evidentiary information. Technical, technical-forensic and scientific-technical tools encompass tangible devices, tools and equipment. Their design and functional characteristics enable to perform tasks effectively during investigative (search) and other procedural actions.

Given the substantial relevance of technical and forensic support for fulfilling tasks of criminal proceedings, we deem it expedient to address problematic aspects of such activities within the framework of smuggling investigation (since criminal offenses related to smuggling are quite common and some of them remain latent).

In 2018, Ukraine's official foreign trade turnover reached $104.5 billion, accounting for around 80% of the country's gross domestic product (GDP). At the same time, it is estimated that shadow imports remained stable at around 10% of GDP. Of the total VAT revenue (UAH 374 billion), the largest share (UAH 295.4 billion, or 79%) came from import VAT. Along with import duties and excise taxes, these funds accounted for nearly half (40.2%) of the State Budget's revenues. Following the full-scale war in 2022, transit of heroin and cocaine in the territory of Ukraine decreased sharply due to both the shutdown of aviation and seaports and a fourfold increase in their value. Instead, synthetic drugs trafficking, especially catinones and methadone, has risen dramatically.

Well-organised criminal groups control the synthetic drug market. These groups include the Khimprom group, which has expanded its activities into cybercrime.

With the onset of the Russian Federation's full-scale invasion, the volume of weapons has expanded, leading to a rise in violent crimes, including cases of domestic violence. Although no large-scale illegal arms exports have been recorded, forensic experts emphasise the importance of constant monitoring in this area due to the significant number of weapons in the country and the presence of groups with experience in trading them. Furthermore, customs fraud and tobacco smuggling cause hundreds of millions of dollars in losses to the State each year through customs duty evasion or document forgery [1].

Studying the mechanism of criminal offenses involving smuggling provides grounds to conclude that their investigation is unfeasible without the use of forensic technology and other scientific and technical means. Moreover, as scientists rightly point out, scientific and technical means used to obtain evidence result from multiple factors and must be applied sequentially [2]. Therefore, the issue of technical and forensic support for investigating criminal offences related to smuggling is a complex one that has not yet been the subject of an extensive study.

Article Purpose

Determine the essence, content and peculiarities of technical and forensic support at the initial stage of investigating crimes involving smuggling.

Research Methods

To fulfil this goal, general scientific methods of analysis and synthesis, induction and deduction, as well as special methods: dialectical, system-structural, comparative-legal and method of generalization were implemented.

The dialectical method ensured a holistic understanding of the essence of technical and forensic support for smuggling investigation, its place in the system of forensic support and facilitated the establishment of links between legal, organizational and technical aspects of this activity.

The system-structural method enabled: 1) to single out key components of technical and forensic support at the initial stage of investigation (means, methods, conditions of application); 2) determine the role of technical and forensic support in the context of criminal proceedings; 3) structure the responsibilities of the investigator, specialist, forensic expert and other authorized subjects in the course of implementing technical measures.

1 Кукуруза Г., Ніколаєнко С., Лесик М. Аналіз обсягів контрабанди в Україні: масштаби, прямі / непрямі втрати бюджету та економіки / Ukraine Economic Outlook : вебсайт. 06.07.2019. URL: https://surl.li/abrqht (date accessed: 27.07.2025) ; Лазарев О., Емельдеш Б., Боярчук Б. Контрабанда та Національна стратегія доходів / Ціна держави : вебсайт. 26.03.2024. URL: https://cost.ua/kontrabanda-ta-natsionalna-strategiya-dohodiv/ (date accessed: 27.07.2025) ; Шапошнікова М. Війна трансформує організовану злочинність в Україні, що завдає економічної і соціальної шкоди / Організація Об'єднаних Націй. Україна : вебсайт. 18.07.2025. URL: https://surl.lu/bcfzmz (date accessed: 27.07.2025).

2 Сокуренко В. Техніко-криміналістичне забезпечення розслідування порушень законів і звичаїв війни. *Теорія та практика судової експертизи і криміналістики.* 2023. Вип. 2 (31). С. 12. DOI: 10.32353/khrife.2.2023.02 (date accessed: 27.07.2025).

Formal-logical methods (analysis, synthesis, induction, deduction) contributed to studying the components and characteristics of scientific and technical means, determining the order of their application, as well as to formulating conclusions on the efficiency of their use (depending on typical investigative situations). The analysis enabled us to identify the specifics of each type of technical means and their role in evidence collection, synthesis — to integrate obtained data into a coherent concept, induction — to formulate general provisions based on analysing individual examples, deduction — to test theoretical provisions in practice.

The comparative-legal method was employed to evaluate different approaches to technical and forensic support for investigating smuggling and other types of crimes. It was also used to differentiate between the concepts of *technical-forensic support* and *scientific-technical support,* and to study international standards and practices in this field.

The generalisation method proved invaluable in formulating conclusions on ways to enhance technical and forensic support for smuggling investigations. This included expanding the material and technical base, unifying methodologies, and upgrading the skills of investigators and specialists.

Analysis of Essential Researches and Publications

Various aspects of investigating criminal offenses related to smuggling are studied in monographs by A. Buha [3], O. Zaverkhovskyi [4], R. Maliuha [5], A. Poliakh [6], I. Rudnytskyi [7], Ya. Furman [8], V. Shevchuk [9], et al.

Issues of technical and forensic support for investigating crimes are comprehensively analysed in research papers by

3 Буга А. Ю. Методика розслідування злочинів, пов'язаних з незаконним обігом лікарських засобів : дис. … д-ра філос. в галузі права. Одеса, 2020. 258 с. URL: https://uacademic.info/ua/document/0822U100024 (date accessed: 27.07.2025).

4 Заверховський О. В. Криміналістична характеристика контрабанди та її значення для правозастосовчої діяльності : дис. … канд. юрид. наук. Київ, 2020. 230 с.

5 Малюга Р. В. Кримінальне процесуальне доказування контрабанди наркотичних засобів, психотропних речовин, їх аналогів чи прекурсорів або фальсифікованих лікарських засобів у досудовому розслідуванні : дис. … канд. юрид. наук. Київ, 2015. 273 с. URL: https://uacademic.info/ua/document/0415U005439 (date accessed: 27.07.2025).

6 Полях А. М. Криміналістична характеристика та основи розслідування контрабанди наркотичних засобів, психотропних речовин, їх аналогів або прекурсорів : автореф. дис. … канд. юрид. наук. Харків, 2009. 22 с. URL: https://uacademic.info/ua/document/0409U001634 (date accessed: 27.07.2025).

7 Рудницький І. Л. Особливості виявлення та розслідування контрабанди наркотичних засобів, що вчиняються організованими злочинними групами : дис. … д-ра філос. в галузі права. Львів, 2019. 250 с. URL: https://lpnu.ua/sites/default/files/2020/radaphd/1857/dysertaciyarudnyckyy.pdf (date accessed: 27.07.2025).

8 Фурман Я. В. Основи методики розслідування контрабанди культурних цінностей : автореф. дис. … канд. юрид. наук. Київ, 2009. 22 с. URL: https://uacademic.info/ua/document/0410U001200 (date accessed: 27.07.2025).

9 Шевчук В. М. Методика розслідування контрабанди: проблеми теорії та практики : монографія. Харків, 2003. 280 с.

V. Bondar [10], V. Husieva [11], N. Pavliuk [12], S. Perlin [13], V. Sokurenko [14], R. Stepaniuk [15], Yu. Chornous [16], and others. Simultaneously, no holistic studies have addressed technical and forensic support for investigating criminal offences related to smuggling, taking into account typical investigative situations that occur at the initial investigation stage.

Main Content Presentation

As reflected in forensic academic discourse, technical and forensic support is viewed as a set of scientific and technical means applied in the course of conducting overt investigative and covert investigative (search) actions, judicial procedures, expert research, as well as for the purpose of providing informational support during pre-trial investigations and court proceedings. It encompasses specially developed technical techniques, methods and methodologies designed to effectively organise and optimise activities of criminal justice agencies in the field of crime prevention, investigation and trial [17].

The concept of technical and forensic support for criminal investigations by units of the Security Service of Ukraine has been addressed as a distinct topic in scientific literature. This approach draws our attention since the investigators have jurisdiction over cases involving the smuggling of cultural property and weapons, in accordance with Art. 216 of the CPC of Ukraine [18]. I. Hora, in particular, defines technical and forensic support for detection and investigation of crimes by the Security Service of Ukraine from both

10 Бондар В. С. Особливості вирішення техніко-криміналістичних завдань досудового розслідування кримінальних правопорушень. *Криміналістика і судова експертиза.* 2021. Вип. 66. С. 284—296. DOI: 10.33994/kndise.2021.66.28 (date accessed: 27.07.2025).

11 Гусєва В. О., Коломойцев М. М. Техніко-криміналістичне забезпечення діяльності захисника у кримінальному провадженні. *Вісник Харківського національного університету внутрішніх справ.* 2025. № 1 (108). Ч. 1. С. 275—284. DOI: 10.32631/v.2025.1.22 (date accessed: 27.07.2025).

12 Павлюк Н. В. Поняття та інноваційні засади техніко-криміналістичного забезпечення розслідування злочинів. *Теорія та практика судової експертизи і криміналістики.* 2015. Вип. 15. С. 96—104. URL: http://nbuv.gov.ua/UJRN/Tpsek_2015_15_15 (date accessed: 27.07.2025).

13 Перлін С. Поняття і види техніко-криміналістичного забезпечення правозастосовної діяльності. *Підприємництво, господарство і право.* 2020. № 1. С. 221—226. DOI: 10.32849/2663-5313/2020.1.40 (date accessed: 27.07.2025).

14 Сокуренко В. В. Зазнач. твір. С. 11—24. DOI: 10.32353/khrife.2.2023.02 (date accessed: 27.07.2025).

15 Степанюк Р. Л. Деякі питання техніко-криміналістичного забезпечення розслідування воєнних злочинів. *Сучасні тенденції розвитку криміналістики та кримінального процесу в умовах воєнного стану* : тези доп. Міжнар. наук.-практ. конф. (Харків, 25.11.2022). Харків, 2022. С. 368—371. URL: https://dspace.univd.edu.ua/xmlui/handle/123456789/15094 (date accessed: 27.07.2025).

16 Бондар В. С. Особливості вирішення техніко-криміналістичних завдань досудового розслідування кримінальних правопорушень. *Криміналістика і судова експертиза.* 2021. Вип. 66. С. 284—296. DOI: 10.33994/kndise.2021.66.28 (date accessed: 27.07.2025).

17 Павлюк Н. В. Зазнач. твір. URL: http://nbuv.gov.ua/UJRN/Tpsek_2015_15_15 (date accessed: 27.07.2025).

18 Кримінальний процесуальний кодекс України від 13.04.2012 р. № 4651-VI (зі змін. та допов.). URL: https://zakon.rada.gov.ua/laws/show/4651-17#Text (date accessed: 27.07.2025).

a general and specific perspective. Broadly speaking, the researcher calls it a system of interconnected research, organizational, informational, and material and technical measures carried out within the powers defined by law and aimed at preventing, detecting, stopping and solving crimes against the peace and security of mankind, terrorism, corruption, organized crime in the field of management and economics, and other illegal actions threatening vital interests of Ukraine. Narrowly speaking, from the scientist's perspective, technical and forensic support aims to create favourable conditions for improving the effectiveness of counterintelligence, operational search, and investigative activities through the development and application of technical tools and methods for collecting and analysing physical media of evidentiary information [19].

Other researchers also suggest examining technical and forensic support for investigations from two perspectives. For example, Yu. Chornous advocates both theoretical (scientific) and practical interpretations. She believes that, in a scientific sense, this involves a system of rules that govern the use of technical tools and the findings obtained, as well as the development of technical and forensic guidelines for investigators, specialists and forensic experts. Practically, it includes a set of devices, tools and equipment used during investigative, operational, and expert procedures [20].

Proposals were also made to define the concept of *technical and forensic support for the disclosure and investigation of drug smuggling*, which D. Stryhun views as the organizational and functional system designed to keep law enforcement agencies constantly prepared to fulfil technical and forensic tasks in a timely and effective manner. This also includes the practical implementation of these tasks in order to obtain, collect and analyse forensically relevant information, and grant it evidentiary status for subsequent use in uncovering and investigating such crimes [21].

Researchers further highlight the importance of unconditional consideration of the *support* concept viewed through the lens of two concepts, specifically: 1) as a reflection of the subject's legal activity aimed at maintaining certain social relations; 2) as set of measures defined by law that ensure the existence or functioning of a certain object or process [22]. K. Chaplynskyi clarifies that support can be explained from a static perspective: as a set of means, methods and tools intended for fulfilling specific tasks, as well as conditions contributing to this process. From a dynamic perspective, it is a process of creating and providing the specified means and conditions. From the researcher's perspective,

19 Гора І. В. Сучасні проблеми техніко-криміналістичного забезпечення розкриття й розслідування злочинів органами Служби безпеки України. *Криміналістика XXI століття* : мат-ли міжнар. наук.-практ. конф. (Харків, 25—26.11.2010). Харків, 2010. С. 121. URL: https://library.nlu.edu.ua/POLN_TEXT/SBORNIKI_2011/KonferKriminalistika_2010.pdf (date accessed: 27.07.2025).

20 Чорноус Ю. М. Техніко-криміналістичне забезпечення розслідування злочинів. *Право і суспільство*. 2011. № 6. С. 216. URL: http://nbuv.gov.ua/UJRN/Pis_2011_6_44 (date accessed: 27.07.2025).

21 Стригун Д. Ю. Техніко-криміналістичне забезпечення розкриття та розслідування контрабанди наркотичних засобів : автореф. дис. … канд. юрид. наук. Київ, 2011. 19 с.

22 Лук'янчиков Є. Д. Методологічні засади інформаційного забезпечення розслідування злочинів : монографія. Київ, 2005. С. 110.

the *support* concept encompasses both forensic support and its other varieties related to the use of forensic means and methods [23]. It is worth noting that the concept of *scientific and technical support* is widely applied today.

V. Shepitko, V. Shevchuk and N. Pavliuk emphasize that *"general significance of scientific and technical support for investigative activities is that it is capable of: optimizing law enforcement agencies' counteraction to modern challenges of crime; maintaining and guaranteeing a high level of pre-trial investigation effectiveness. If we delve deeper into the value of scientific and technical support for investigative activities, it can be argued that it lies in offering opportunities for: a) boosting the efficiency of investigative and covert investigative (search) actions; b) improving the quality of detection, recording, seizure, preservation and study of traces and physical evidence to disclose a criminal offense and identify a perpetrator; c) expanding cognitive capabilities of investigators and other authorized persons, as well as developing their professional skills; d) providing a better visualization of information for participants to criminal proceedings and courts; e) speeding up the pre-trial investigation procedure; f) identifying causes and conditions that have contributed to crime commission and obtaining information about offences that have been committed or are being planned"* [24].

Scientific and technical support for investigative activities can be defined as a component of forensic support. It is a system of measures aimed at implementing novel scientific developments in pre-trial investigation practice. The goal is to expand and modernise the scientific and technical arsenal, as well as improve organisational and legal mechanisms for authorised subjects to use it. In content, such support covers a set of interrelated scientific, organizational, legal and methodological issues that form a single system and are mutually dependent [25]. In our opinion, the above definition is quite broad in scope since it also encompasses scientific issues. We believe that the concepts of *scientific and technical support for investigative activities* and *technical and forensic support for investigation* stand in a whole-part relationship. The former is the practical implementation of the latter.

It should also be noted that technical and forensic support is proposed to be classified according to several levels:

1) depending on proceedings (criminal, administrative, civil, economic);
2) taking into account criminal procedure stages (pre-trial investigation, trial);
3) in the context of investigating certain types of crimes at the stage of pre-trial proceedings;
4) as technical support for conducting specific investigative and search actions with involvement of specialists [26].

23 Чаплинський К. О. Поняття та сутність тактичного забезпечення досудового розслідування. *Право і суспільство.* 2011. № 6. С. 210. URL: http://nbuv.gov.ua/UJRN/Pis_2011_6_43 (date accessed: 27.07.2025).

24 Шепітько В. Ю., Коновалова В. О., Шевчук В. М. та ін. Науково-технічне забезпечення слідчої діяльності в умовах змагального кримінального провадження : монографія / за заг. ред. В. Ю. Шепітька. Харків, 2021. С. 24. URL: https://surl.lu/govfmm (date accessed: 27.07.2025).

25 Шепітько В. Ю., Коновалова В. О., Шевчук В. М. та ін. Зазнач. твір. С. 28—29. URL: https://surl.lu/govfmm (date accessed: 27.07.2025).

26 Перлін С. І. Зазнач. твір. DOI: 10.32849/2663-5313/2020.1.40 (date accessed: 27.07.2025).

We are of the opinion that technical and forensic support varies significantly depending on the investigation stage. This is particularly true of smuggling, where the initial support significantly affects the efficiency of subsequent investigation stages.

When defining the essence and content of technical and forensic support for investigating crimes related to smuggling, the issue of a variety of scientific and technical means used throughout the investigation cannot be overlooked. In the scientific literature, scientific and technical means are interpreted as a set of various methodologies, universal technical equipment and purpose-built tools, devices, machines, materials, technological solutions, along with tactical and technical techniques intended for their effective use. Such means serve to detect, document, seize evidence, and examine traces of criminal activity to improve the performance of inquiry bodies, pre-trial investigation, judicial authorities, and to prevent the commission of criminal offenses [27].

Scientific and technical means are predominantly utilized during individual investigative (search) actions and criminalistics examinations. During smuggling investigation (specifically, at the initial stage), the most common investigative (search) action is the inspection of premises of state and non-state enterprises, institutions and organisations (customs territories, postal premises, etc.). Thus, principal tasks of inspecting places where smuggling takes place include detecting and recording traces of unlawful activity, as well as identifying the subject of smuggling itself.

In most cases, contraband is transported (smuggled) using hiding places or other methods of physical concealment that make it difficult to visually detect contraband items; by making contraband items look like other items; by presenting forged, illegally obtained, or falsified documents to customs authorities as legal justification for transporting other items [28]. This substantially hinders the process of identifying criminal offense signs. Therefore, the task of identifying and using technical and forensic means becomes a priority. I. Rudnytskyi rightly points out that *"the peculiarity of an investigative inspection in criminal proceedings on drug smuggling is that various technical and forensic means are used in the course of its conduct, in particular: X-ray and X-ray television equipment, echolocation devices, signalling devices, tools for opening the packaging of boxes and containers, as well as special sets of chemical reagents for rapid analysis of substances and materials, and search animals are used to search for and detect drug smuggling in hand luggage and baggage at the scene. If a person is suspected of carrying drugs in the abdominal cavity, he or she is subjected to an X-ray"* [29]. The same applies to the smuggling of firearms, explosive devices, ammunition, radioactive, toxic and potent substances.

27 Коваленко В. В. Актуальні проблеми застосування науково-технічних засобів спеціалістами при провадженні слідчих дій : автореф. дис. … канд. юрид. наук. Київ, 2004. С. 7. URI: https://rep.dnuvs.ukr.education/handle/123456789/545 (date accessed: 27.07.2025).

28 Шевчук В. М. Розділ VIII «Розслідування контрабанди» / В. Ю. Шепітько, В. О. Коновалова, В. А. Журавель та ін. Розслідування злочинів у сфері господарської діяльності: окремі криміналістичні методики : монографія ; за ред. В. Ю. Шепітька. Харків, 2006. С. 481—537. URL: https://library.nlu.edu.ua/POLN_TEXT/KNIGI/PRAVO/Shepitko_Rozslid_2006.pdf (date accessed: 27.07.2025).

29 Рудницький І. Л. Зазнач. твір. С. 164. URL: https://lpnu.ua/sites/default/files/2020/radaphd/1857/dysertaciyarudnyckyy.pdf (date accessed: 27.07.2025).

When detecting and recording traces of a criminal offense, various technical means are widely applied to detect contraband items: from inspecting metal detectors and endoscopes to probes for radiation monitoring equipment (such as dosimeters and other measuring devices). Moreover, special sets of chemical reagents are used, enabling the rapid analysis of substances and materials [30].

Currently, photography and video technology fulfil a crucial role among the scientific and technical tools used to detect explosive objects. This is because the characteristics of explosive substances change under the influence of oxygen, which can subsequently have a negative impact on their storage, transportation and further examination [31]. Simultaneously, detection of such objects and substances can also be carried out with the help of a dog handler with a search dog.

Stemming from the analysis of investigative and judicial practice, when identifying facts of smuggling, you should never limit yourself to using the capabilities of forensic olfactory examination, even though you could use them as a substantial piece of evidence in such circumstances. To collect odour traces, it is important to ensure the presence of a full set of agents, including pieces of pure cotton cloth such as flannelette, flannel or gauze, measuring approximately 10 x 15 cm. Ideally, gauze should be arranged in three to four layers. Additionally use aluminium foil in a roll and paper envelopes (intended for packing objects wrapped in foil). To store traces of odor information, clean glass jars with metal lids will be of use (polymer bags or plastic lids are unacceptable: they can absorb odorous substances as well as allow them to pass through). A spray gun with tap water, two large anatomical tweezers and thick rubber gloves (e.g., gloves resistant to acids and alkalis) should also be added to this kit [32]. Accordingly, it is crucial to ensure that a number of items, which appear to be for household use but not all of them are traditional components of investigative kits, are available.

When detecting and further packaging cultural properties (in compliance with inspection results), the importance of packaging should be stressed. Packaging of cultural properties requires special attention and care to ensure their preservation and prevent damage during transportation or storage. This involves the use of appropriate materials, techniques and specific expertise about particular property types.

The above provisions apply to those investigative situations where signs of a criminal offense have been identified by border or customs employees or representatives of postal enterprises. At the same time, there are frequent instances in which such facts were documented based on the results of operational and search

30 Шевчук В. М. Розділ VIII … . URL: https://library.nlu.edu.ua/POLN_TEXT/KNIGI/PRAVO/Shepitko_Rozslid_2006.pdf (date accessed: 27.07.2025).

31 Приходько Ю. Особливості техніко-криміналістичного забезпечення розслідування злочинів, пов'язаних з кримінальними вибухами. *Visegrad Journal on Human Rights.* 2015. № 5/1. С. 106—113. URL: https://elar.navs.edu.ua/server/api/core/bitstreams/1050d76c-90cd-40a6-846f-083b438679cc/content (date accessed: 27.07.2025).

32 Юсупов В. В., Антощук А. О., Приходько Ю. П. та ін. Використання службових собак кінологічними підрозділами Національної поліції України для виявлення вибухових речовин в умовах воєнного стану : метод. рек. Київ, 2023. С. 39. URL: https://elar.navs.edu.ua/server/api/core/bitstreams/3723aed3-5084-47e5-baba-2f96a8d3c373/content (date accessed: 27.07.2025).

activities conducted during investigations of other criminal offenses, often initiated by statements from individuals or representatives of enterprises, institutions and organizations.

In situations where the conduct of verbal investigative (search) actions, such as interrogation, as well as covert investigative (search) actions, occurs before detecting the smuggling subject, the specifics of technical and forensic support are determined by the type and nature of these actions.

In the course of interrogating, technical tools of recording are primarily audio, video, as well as photography and other means that enable you to record the interrogation process and data obtained. These tools are used to ensure testimony reliability and objectivity of the investigative (search) action.

Forensic support components for conducting covert investigative (search) actions include:

1) scientific analysis of the essence and practical aspects of covert investigative (search) actions to identify strategies for enhancing their efficiency;
2) development of practical advice to improve the tactics and methods used in such actions, alongside the improvement of technical means and methods of application, based on the fundamental principles of criminalistics and operational (search) activities;
3) verification and implementation of these guidelines in the work of law enforcement agencies;
4) training and advanced training of investigators and operatives, aimed at cultivating the required professional skills for implementing covert investigative (search) actions in a qualitative way [33].

Analysis of the Instruction on the Organization of Covert Investigative (Search) Actions provisions and the use of their results in criminal proceedings indicates the possibility of using a wide range of technical and scientific-technical tools designed to record, intercept, process and save information, as well as to provide covert surveillance and control over facilities, individuals, etc. [34]

Thus, during audio and video surveillance, persons or places use miniature and spy cameras, hidden microphones, audio and video recorders capable of remote signal transmission, as well as night vision devices, thermal imagers and tools for sound stabilization. To retrieve information from transport telecommunication networks, specialized devices for intercepting telephone conversations, Internet traffic monitoring systems, and software and hardware systems for retrieving data from mobile networks are used.

Information extraction from electronic information systems is possible through the use of computer forensic hardware and software systems, devices for copying data from personal computers, servers

33 Грібов М. Л. Зміст та основні напрями криміналістичного забезпечення негласних слідчих (розшукових) дій. *Вісник кримінального судочинства.* 2017. № 1. С. 37. URL: https://vkslaw.knu.ua/images/verstka/1_2017_Gribov.pdf (date accessed: 27.07.2025).

34 Інструкція про організацію проведення негласних слідчих (розшукових) дій та використання їх результатів у кримінальному провадженні : затв. наказ. Генпрокуратури України, МВС України, СБ України, Адміністр. Держприкордонслужби України, Мінфіну України, Мін'юсту України від 16.11.2012 р. № 114/1042/516/1199/936/1687/5. URL: https://zakon.rada.gov.ua/laws/show/v0114900-12#Text (date accessed: 27.07.2025).

and mobile phones, programs for restoring deleted files and decoding protected datasets, and remote access tools. During inspection and retrieval of correspondence, devices for trace-free unpacking of postal items, X-ray scanners, chemical reagents for detecting prohibited substances, marking means such as microdots or invisible ink, as well as GPS beacons mounted in packaging, can be used.

Endoscopes and borescopes, thermal imaging cameras, metal detectors, electronics detectors, non-linear locators (Nonlinear Junction Detectors), along with special tools for installing hidden recording devices are utilized to examine publicly inaccessible places, housing or other property of a person. When observing people, things or places in publicly accessible spaces, law enforcement agencies can use optical devices (binoculars, telephoto lenses), drones with cameras, hidden *GPS* trackers, vehicle dash cameras (vehicle DVRs), and radio monitoring systems.

While conducting surveillance during the commission of a crime, dummy valuables, packages with safe substitutes for narcotic drugs or explosives, controlled goods with hidden cameras, along with radio beacons for tracking movement are used in the course of special investigative experiments or crime scene simulation. During the performance of special tasks to uncover criminal activities of organised groups, means used to support a spy's cover story, communication devices, silent recording devices, and secure data transmission channels are utilized.

Therefore, technical and scientific tools used in covert investigative actions include specialised equipment for collecting and recording information, as well as supporting tools for ensuring the concealment and safety of actions. This allows the task of criminal proceedings to be carried out effectively without revealing their essence. The same types of technical and forensic tools can also be utilized in conducting overt investigative (search) actions.

In the context of outlining the prospects for enhancing technical and forensic support for smuggling investigation, we observe that the most important avenue is modernizing existing technical tools and introducing new technologies that can boost the efficiency of identifying, recording and studying traces of unlawful activity and evidence. These comprise portable mass spectrometers, next-generation X-ray scanners and 3D X-ray systems, as well as modern sensors and detectors that can locate items disguised as other objects. There is considerable potential in deploying artificial intelligence for automated analysis of video and photo recordings, telecommunication data, along with integration of unmanned aerial vehicles and robotic platforms to inspect hard-to-reach places. It is worth pointing out that digital forensics development encompasses the creation of mobile systems for the prompt retrieval, restoration and deciphering of data from electronic media, phones and cloud services.

At the same time, there is a need to improve scientific and methodological support. This includes developing unified methods for detecting, recording and retrieving traces and evidence when investigating various types of smuggling; creating algorithms for the initial investigation stage, where efficiency and accuracy are crucial; and utilising olfaction as a promising, yet not widespread, means of documenting the mechanisms of criminal activity.

It is advisable to supplement the material and technical base with standard sets of crime scene investigation kits. These kits should be packed taking into

account the specifics of various contraband types, mobile forensic laboratories for rapid analysis at the scene and specialized means for packing cultural property, explosive substances or perishable items.

Training and skill upgrading are both equally important for pre-trial investigation bodies and specialists. For this purpose, it is advisable to conduct regular training sessions on the use of modern technical tools, simulation-based trainings and hold joint interagency trainings for the Security Service, Customs and Border Services, the Ministry of Internal Affairs, the Bureau of Economic Security of Ukraine. This will help coordinate the tactics of action and ensure comprehensive application of technical resources.

Developing information and analytical support is steadily gaining significance. This involves the creation of unified databases containing information on smuggled goods and perpetrators, integration of video analytics systems and analytical data on behavioural patterns in places where crimes are likely to be committed, and introduction of automated risk analysis tools.

The final, yet no less important, aspect is to improve the legislative and regulatory framework. The rules governing the use of new technical methods for collecting evidence must be amended, and standards for storing, preserving and implementing findings obtained from technical and forensic examinations must be set out. It is also necessary to regulate interagency cooperation in countering smuggling.

Thus, the development of technical and forensic support for smuggling investigations depends on a comprehensive approach, which presupposes modernizing technical tools, unifying methodological approaches, upgrading professional skills of investigators and operatives, strengthening a financial base and modernizing the normative. When these factors are combined, accuracy and probative value are ensured in obtained results, and the speed of obtaining them is increased.

Conclusions

The conducted research makes it possible to define technical and forensic support for smuggling investigation as an organizational and functional system aimed at fostering and maintaining the readiness of law enforcement agencies to quickly and efficiently fulfil the tasks of criminal proceedings. In the structure of this system, particular importance is attributed to scientific and technical support, which involves using technical means and techniques to investigate crimes. This is the practical component.

Having generalised theoretical approaches and practices in the investigation of criminal offences, the author points out that peculiarities of applying scientific and technical means are conditioned by investigative situations characteristic of smuggling, which in turn determine the algorithm of investigative (search) and covert investigative (search) actions.

Prospects for enhancing technical and forensic support for smuggling investigations primarily lie in combining technological innovations, refining methodological approaches, upgrading the skills of pre-trial investigation agencies, expanding material and technical resources, and ensuring proper legal regulation of the use of scientific and technical means. Only the integration of these factors can ensure the accuracy, promptness and probative value of both results obtained from investigative and other procedural actions and forensic examinations in this complex category of criminal offences.

Техніко-криміналістичне забезпечення початкового етапу розслідування контрабанди

Юрій Ковальов

Мета статті — визначити сутність і зміст, а також особливості техніко-криміналістичного забезпечення початкового етапу розслідування кримінальних правопорушень, пов'язаних із контрабандою. Для реалізації поставленої мети застосовано загальнонаукові методи аналізу та синтезу, індукції та дедукції, а також спеціальні методи — діалектичний, системно-структурний, порівняльно-правовий і метод узагальнення. З'ясовано, що техніко-криміналістичне забезпечення є комплексом організаційних і технічних заходів, спрямованих на ефективне застосування науково-технічних засобів і методів для виявлення, фіксування, вилучення й дослідження доказової інформації. На підставі узагальнення теоретичних підходів і практики розслідування кримінальних правопорушень з'ясовано, що особливості застосування науково-технічних засобів зумовлені слідчими ситуаціями, характерними для контрабанди, які своєю чергою визначають алгоритм слідчих (розшукових) і негласних слідчих (розшукових) дій. Перспективи вдосконалення техніко-криміналістичного забезпечення розслідування контрабанди вбачаються у поєднанні технологічних інновацій, удосконаленні методичного підходу, підвищенні кваліфікації представників органів досудового розслідування, розширенні матеріально-технічної бази й забезпеченні належного правового регулювання застосування науково-технічних засобів. Саме поєднання цих чинників здатне забезпечити точність, доказову цінність і швидкість отримання результатів слідчих (розшукових) та інших процесуальних дій, а також судових експертиз у цій складній категорії кримінальних правопорушень.

Ключові слова: *криміналістичне забезпечення; досудове розслідування; початковий етап; науково-технічний засіб; спеціаліст-криміналіст.*

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