Problematic aspects of using forensic expert conclusion on results of the forensic examination of electric shock accidents

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The article is devoted to topical and at the same time debatable topic of using forensic expert conclusion based on forensic examination results of electric shock accidents.

Evaluation and verification of forensic expert conclusion, as one of the sources of evidence obtained on the basis of scientific knowledge is a prerequisite for impartiality, objectivity and comprehensiveness of the investigation in criminal proceedings and court proceedings. Conclusion assessment and verification consists of the solution of two general groups of issues: 1) compliance with procedural rules and requirements while appointment, forensic examination and conclusion submission: procedural assessment; 2) correctness, scientific validity and reliability of research and the conclusion is a meaningful assessment.

Difficulty of correctly assessing and verifying reliability and scientific validity of forensic expert conclusion by investigative bodies or the court is due to the fact that conclusion is an expert’s deduction made on the basis of specific expertise in a particular field of science and technology. Certainly, investigator or the court does not have such knowledge. Sometimes they cannot objectively assess and verify the conclusion content for correct choice of methodology, methods used and methods of problem solving. It is emphasized that solution of such issue by investigation or the court is especially difficult in default of proven methods, or when applying new types of examinations.

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The article presents some aspects of verification of the facts established in the conclusion, their consistency with other circumstances and evidence in the case. Emphasis is placed on the fact that it is often difficult to verify the facts established in while investigation of electric shock accidents, consistency of these facts with other evidence in the case, if forensic examination establishes such facts, or when examination establishes certain crime elements.

The ways of solving some complex aspects of the substantive assessment of forensic expert conclusion by investigation or the court are identified; it is proposed to make certain changes in procedural legislation regarding the independent review of forensic expert conclusion.

**Keywords:** forensic engineering examination, forensic electrical examination, life safety examination, electric shock accidents, examination as a source of evidence.

**Formulation of Research Problem**

The Criminal Procedural Code of Ukraine stipulates forensic expert conclusion among sources of evidence, which is based on scientific, technical or other specific expertise and provides an opportunity to establish circumstances related to the fact in proof and other legally important circumstances for a criminal proceeding. As practice shows, a successful investigation and trial of a considerable number of cases are impossible without the use of knowledge in the form of forensic expert conclusion.

Forensic engineering examination of electric shock accidents associated with electrical injuries has an integrative nature of using different specific expertise, in particular in the field of life safety and electrical engineering. While performing such researches, typical expert tasks are usually solved which generally coincide with typical tasks of life safety examination. However, a distinguishing feature of the examinations of electric shock accidents is simultaneous combination and indivisibility of two tasks: diagnostic (determining technical condition of electrical equipment that has become the source of a hazardous factor of electrical nature) and situational (establishing the mechanism and conditions of injury, the cause of an accident and the range of cause-effect relations).

Forensic examination of electric shock accidents mainly relates to solving a situational task, in the course of which a forensic expert relies on source data which largely result from subjectivity of the source of information (testimony of witnesses and a victim, other persons involved in an event, etc.). Perception of certain information depends on many circumstances, in particular mental state, age, sex, education, intelligence. For the most part, certain inaccuracies, mistakes, discrepancies with real course of the event are not excluded. Oftentimes, there is an attempt to deliberately distort facts, mislead, driven by a desire to avoid responsibility.
The use of forensic expert conclusion based on the results of the study of electric shock accidents is impossible without its overall assessment, verification through analysis and comparison with other evidence collected while criminal proceeding.

At the current stage of the development of forensic science, the issue of assessing forensic expert conclusion is still debatable, its relevance is not undermined, though a substantial amount of researches have been conducted and many distinguished scholars outlined this problem in their works. Since forensic expert conclusion is based on specific expertise in the field of science and technology, which possess a limited number of people, it results in different (sometimes opposite) views of procedural scientists on the content and procedure for assessing a conclusion.

An individual serious problem in assessing forensic expert conclusion is the emergence of new types of expert researches due to the needs of investigative practice and the development of science and technology. Oftentimes, new types of forensic examinations are not provided with validated methods for conducting such researches. It complicates a meaningful assessment of a conclusion.

The research is the result of the author’s deduction based on his own experience in forensic science and analysis of scientific and regulatory sources, study of expert, investigative and judicial practice of conducting forensic examinations of electric shock accidents and the use of forensic expert conclusion.

Analysis of Essential Researches and Publications

Theoretical and practical problems of the process of proof in criminal proceedings have been studied by famous scientists of both this and last century, in particular, L. Iu. Arotsker, T. Ie. Balynian, Yu. M. Hroshevyi, O. Iu. Hrosheva, L. M. Derecha, R. Katszor, Yu. K. Orlov, O. S. Panievin, D. V. Puchko, E. B. Simakova-Yefremian, S. M. Stakhivskyi, M. H. Shcherbakovskyi and others 3. They focused on the nature and criteria of the fact in proof, its boundaries and subjects, discussed in detail theoretical and applied issues of the assessment of forensic expert conclusion on certain

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types of examinations and methodologies of performing a forensic examination, as well as the problem of using forensic expert conclusion as evidence in criminal proceedings.

However, today in the scientific community of processualists, experts and practitioners, there is no consensus in understanding the issue of assessing forensic expert conclusion: in particular, its content, exhaustiveness, validity and correctness. Existing daunting issues in this area condition the relevance of this research.

Article Purpose

Outline available problematic issues concerning the assessment and use by investigator or the court of forensic expert (forensic experts) conclusion based on the results of research on electric shock accidents and determine ways for their solution.

Main Content Presentation

The current Criminal Procedural Code of Ukraine specifies tasks of criminal proceedings, which are to defend persons, society and the state from criminal offenses, protect rights, freedoms and legitimate concerns of criminal proceeding participants, as well as ensure prompt, exhaustive and impartial investigation and trial, so that everyone who committed a crime has been prosecuted to the measure of his guilt, and no innocent person is incriminated and/or convicted, that no person is subjected to unreasonable procedural coercion. All these tasks are implemented by proving which permeates all stages of the criminal process and is the foundation for making all procedural decisions.

As source of evidence according to the Criminal Procedural Code of Ukraine, forensic expert conclusion provided on the grounds of specific expertise enables to determine circumstances belonging to the fact in proof and other circumstances of significant importance for a proceeding. Successful investigation and solution of criminal proceedings are impossible without the use of this evidence in the majority of cases. Thus, during 2018, 2019—2020, Hon. Prof. M. S. Bokarius Kharkiv Research Institute of Forensic Examinations of the Ministry of Justice of Ukraine (currently, National Scientific Center «Hon. Prof. M. S. Bokarius Forensic Science Institute») conducted respectively 29,943; 36,147 and 37,215 forensic examinations and expert researches. Therefore, there is a tendency to increase the number of forensic examinations and expert researches.

The quintessence, result of any expert research within the framework of conducted examination is forensic expert conclusion. The use of expert findings while preliminary investigation and trial of a criminal proceeding is of particular importance. Indeed, the procedure for appointing, conducting researches and compiling the forensic expert conclusion is worthless if for various reasons forensic expert conclusion cannot be used in the
Guiding principles for evaluation of evidence are the same at all stages of a criminal proceeding and stipulated by Art. 94 of the Criminal Procedural Code of Ukraine:

“1. Investigator, public prosecutor, investigating judge, court evaluates evidence based on his own moral certainty grounded in comprehensive, complete, and impartial examination of all circumstances in criminal proceedings being guided by law, evaluates any evidence from the point of view of adequacy, admissibility, and in respect of the aggregate of collected evidence, sufficiency and correlation, in order to take a proper procedural decision.

2. No evidence shall have any predetermined probative value” 6.

Inner conviction of the investigator, prosecutor, judge is a strong confidence conditioned by them regarding the correctness of the assessment of all evidence, information and facts established while proceedings, accuracy of drawn conclusions on all issues that occurred during investigation.

Undoubtedly, inner conviction has dual nature, since it is, on the one hand, characterized by a certain subjectivity, because it is confidence of a particular person: criminal proceeding subject. On the other hand, it has an objective basis. This basis is evidence, its reliability and accuracy of drawn conclusions, which is the result of analysis and careful assessment of the whole set of factual data and circumstances that have legal significance for adjudication of a case.

Similar to any other piece of evidence, forensic expert conclusion must be assessed in terms of adequacy, admissibility and credibility.

Conclusion adequacy means the possibility of its use in a proceeding to identify factual data and circumstances to be proved. As noted in the specialized literature, the adequacy of evidence is such an internal feature of it, through which this evidence is capable of determining circumstances needed for an exhaustive and proper resolution of a proceeding7.

Article 85 of the Criminal Procedural Code of Ukraine stipulates: “Evidence is adequate if it directly or indirectly confirms the presence or absence of circumstances to be proved in criminal proceedings and other circumstances which are important for the criminal proceedings, as well as credibility or non-credibility, possibility or impossibility of using other evidence” 8.

The admissibility of forensic expert conclusion is one of its features which is characterized by compliance with the procedural order for appointment and conduct of the examination. It should also be emphasized that only those objects and source data that were obtained in accordance with procedural law may be subjected to research and application within the framework of forensic examination. In case of admissibility of using certain research objects, forensic expert conclusion is also recognized as inadmissible evidence and it loses its

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6 Кримінальний процесуальний кодекс України ... . URL: https://zakon.rada.gov.ua/laws/show/4651-17#Text (date accessed: 17.08.2021).
8 Кримінальний процесуальний кодекс України ... . URL: https://zakon.rada.gov.ua/laws/show/4651-17#Text (date accessed: 17.08.2021).
provability. The conclusion must also be duly formalized, providing it with all required details stipulated by procedural law and other legal acts.

In our opinion, the most successful formulation of evidence credibility is the following: “evidence credibility is a feature of factual data that constitute the evidence content, to establish the presence or absence of circumstances essential for a criminal proceeding, based on the inner conviction of the subject of proof rested upon a comprehensive, exhaustive and impartial investigation of all circumstances of a criminal proceeding.”

As of today, there is no consensus in scientific communities about the possibility of a full and objective verification and assessment of forensic expert conclusion by investigator, prosecutor or the court. However, it should be stressed that the necessity of such assessment, its significance and role in further consideration of a case are supported and highlighted by scientists and law enforcement practitioners.

According to Yu. K. Orlov, forensic expert conclusion includes certain difficulties regarding its assessment for persons who do not possess specific expertise. He stresses that it leads to over-reliance on forensic expert conclusion, overestimation of its evidentiary value.

A distinguished procedural scientist L. Ye. Vladymyrov supports the concept under which forensic expert conclusions are not subject to assessment by the court, since they are provided on the basis of specific scientific knowledge, for which understanding profound knowledge in this area is required. He notes that since judges are free to choose an expert, they undoubtedly must view their conclusions as reliable and correct.

A. R. Bielkin also does not agree on the fact that a person who does not possess specific expertise in a particular field of science (investigator, prosecutor, judge) can thoroughly and comprehensively assess forensic expert conclusion. The scientist notes that in specialized literature and guidelines for investigators and judges it is recommended to assess a conclusion on the basis of the expert’s competence, current level of applicable methods of investigation, logical and scientific validity of a conclusion, its exhaustiveness.

The Plenum of the Supreme Court of Ukraine (hereinafter referred to as the SC of Ukraine) obliges courts to refer to the following assessment criteria when reviewing and assessing forensic expert conclusion:

- whether the requirements of legislation were met while appointment and conduct of an examination;
- whether there were circumstances that excluded participation of an expert in a case;
- the expert’s competence and whether he exceeded his authority;
- sufficiency of research objects submitted to the expert;
- exhaustiveness of answers to raised questions and their compliance with other factual data;

10 Сергєєва Д. Б. Поняття та сутність достовірності доказу як його властивості. Юрист України. № 1 (26), 2014. С. 91.
11 Орлов Ю. К. Оп. цит.
• consistency between the research part and the final conclusion of the examination;
• validity of forensic expert conclusion and its consistency with other case files.

The analysis of the indicated above criteria regarding the assessment of forensic expert conclusion gives reasons to group them according to two directions: 1) criteria for assessing general procedural rules for appointment, conduct of an examination and compilation of forensic expert conclusion; 2) assessment criteria directly of forensic expert conclusion: its meaningful assessment.

A similar approach to the assessment of forensic expert conclusion also extends to legislation of other countries. For example, the Supreme Court of the Republic of Poland referring to the assessment of forensic expert conclusion stresses that they are reliable findings. However, the court is obliged to analyze and assess a conclusion from the viewpoint of logical thinking principles, thoroughness of a research, thoroughness of materials submitted for research, accuracy and suitability of application of research methods in a specific case.

In the light of the position of the Supreme Court of Poland, the scientist Robert Kaizer proposed to assess forensic expert conclusion under the following scheme. First, it seems necessary to determine whether a conclusion corresponds to its template, as well as its compliance with rules of criminal procedure legislation. The next stage is analysis of a conclusion according to the criteria of thoroughness as well as additional criteria: ambiguity of forensic expert conclusions, existence of contradictions in a conclusion itself and other forensic expert conclusions. In case of non-compliance with a certain criterion, it is required to interrogate the expert, appoint additional examination or assign a research to another expert.

There is no doubt that when examining and assessing a conclusion by investigator, prosecutor or the court, the most difficult part is a meaningful assessment of a conclusion, its scientific validity, compliance with forensic methods, as well as sufficiency of source data for conclusions, efficiency of methods and ways of research applied by the expert, compliance of conclusions with performed research.

The use of reliable, time-tested and practiced forensic methods when checking and assessing forensic expert conclusion as a source of evidence: “Validity of forensic expert conclusions and reliability of results depend on the reliability of applied methodologies”.

In 1993, the Supreme Court of the USA adopted rules (Daubert ruling) for judges regarding forensic examination conclusions. In particular, these rules stipulate that any forensic methodology should have a clearly defined risk of error. After that, the USA began to implement activities to ensure correspondence of
methodological support of examinations with Daubert ruling. In 2009, following the conducted researches, the National Academy of Sciences of the USA published a report criticizing expert methodologies applied in criminal proceedings, identifying numerous mistakes made by forensic experts which resulted in illegal sentences. At the same, It was stressed that one of the reasons for passing such sentences is an uncritical attitude to assessing the scientific validity and objectivity of forensic experts conclusions.

As M. H. Shcherbakovskiyi notes, it is important to ensure conformity of the expert's conclusions to other evidence obtained while criminal proceedings. If there are no contradictions between final conclusions of the expert (experts) and materials of criminal proceedings, then a conclusion is used in proof. The existence of contradictions requires verification of a conclusion. Contradictions can be conditioned both by mistakes made by experts while expert research and by a bad quality of other evidence.

However, verification for coherence and relevance of forensic expert conclusions with other evidence, facts and circumstances recorded in a criminal proceeding can result in significant difficulties and very often becomes a real issue for investigator and the court.

Expert research may identify new factual circumstances that have legal significance for a case. That is, the expert can identify new evidence that is not in the case file, new signs of a criminal offense. The expert task may involve establishing factual data required for a proper classification of the offense. For example, the expert's definition of the category of work (high risk or not) in the course of which an accident happened, gives the investigator grounds to aptly classify a crime on the grounds of Art. 271 or 272 of the Criminal Code of Ukraine.

While performing investigation of electric shock accidents, the expert technically establishes the existence of cause-effect relation between actions/inaction of a particular official and the event. This fact established by an expert will form a basis for putting a person to justice.

An individual defining feature of forensic engineering examination of life safety is solution of prognostic tasks, when non-compliance with certain rules and regulatory requirements threatens death or injury or other severe consequences. In this case, while research, the expert establishes certain elements of objective and subjective aspects of a crime from a technical point of view, which gives the investigator grounds to make corresponding procedural decisions.

As demonstrates the above, verification and assessment of forensic expert conclusion on relevance and consistency with other evidence in the case in such...
cases will pose challenges for investigator or the court.

As of today, the procedural legislation stipulates separate mechanisms for solving such an indisputably complex, responsible and significant task as integrated assessment and verification of evidence for adequacy, admissibility and credibility. Such mechanisms include, in particular, questioning of the expert to obtain his clarifications as to a conclusion, appointment of a re-examination, etc.

The procedural aspect of interrogation of an expert in the court is stipulated by Part 3 of Article 356 of the Criminal Procedural Code of Ukraine, also this rule specifies that “expert may be asked questions regarding his possession of special knowledge and qualification in the field of examination (education, working experience, scientific degree etc.), relevant to the subject of his expert examination; methods used, and theoretical developments; sufficiency of information based on which findings were prepared; scientific basis and methods used to arrive at the conclusion; applicability and correctness of application of principles and methods to facts of the criminal proceedings; and other questions relating to the reliability of findings” 23. Also, two or more experts may be interrogated in the court at the same time in certain conditions.

In accordance with para. 11 of the Resolution of the Plenum of the Supreme Court of Ukraine No. 8 dated on 30.05.1997: “Re-examination is appointed when there are doubts as to correctness of forensic expert conclusion, related to its lack of validity or contradiction with other case files <…>.

<…>

The decree on re-examination appointment shall indicate circumstances raising doubts regarding correctness of previous conclusion of an expert.

Re-examination may be entrusted only to another expert” 24.

As we have seen, there are quite efficient mechanisms for assessing and verifying forensic expert conclusion aimed at seeking the objective truth in a case and are a guarantee of conclusion 25 correctness.

However, there are cases when interrogation of an expert does not allow for the elimination of certain inaccuracies and contradictions, does not convince the court in correctness of chosen methodology or methods of solving a task, and re-examination appointment delays consideration of this case or for some reason is impossible or impractical (for example, the lack of other forensic experts in this specialization). The court faces a difficult issue to verify conclusion correctness, especially when a research ultimately establishes elements of a crime and/or when there are no tested methodologies of such researches.

In practice, individual experts use peer review to verify and assess forensic expert conclusion.

The word review comes from the German rezension, Latin recension, English review, which means examination, evaluation. Generally speaking, a review is an analysis, study, a certain critical evaluation of a publication, work or product.

The procedure for reviewing forensic expert conclusions is regulated by the Procedure for reviewing forensic expert

23 Кримінальний процесуальний кодекс України ... . URL: https://zakon.rada.gov.ua/laws/show/4651-17#Text (date accessed: 17.08.2021).
24 Про судову експертизу в кримінальних і цивільних справах ... . URL: https://zakon.rada.gov.ua/laws/show/v0008700-97#Text (date accessed: 10.08.2021).
conclusions approved by the order of the Ministry of Justice of Ukraine No. 335/5 dated on 03.02.2020 (hereinafter: the Review Procedure) 26. According to this procedure, the purpose of reviewing forensic expert conclusion “is to improve professional skills of experts, enhance quality and validity of their conclusions. Reviewing is not performed in order to refute or confirm conclusions [Emphasis added.— Author.]”. Also, the Review Procedure stipulates that review should contain “a detailed description of a conclusion concerning its compliance with the requirements of regulations on forensic activities and methodologies of forensic examinations”27.

Therefore, reviewing forensic expert conclusion is not a tool through which forensic expert conclusion can be considered unreliable, inadmissible evidence and/or inaccurate. The reviewer cannot refute or confirm a conclusion, and the Review Procedure does not provide for a review for consideration by the court or investigation.

Article 71 of the Criminal Procedural Code of Ukraine stipulates that “specialist in criminal proceedings shall be a person who has specific expertise and skills necessary to use technical or other devices and who is able to consult during pre-trial investigation and trial on issues which require special knowledge and skills”28. It is a specialist, as a person who possesses specific expertise in a particular field of science, can provide information about the technical feasibility, suitability of applying certain techniques to solve specific problems, to report on modern methods and ways for their solution.

It is also essential that the specialist cannot assess forensic expert conclusion in terms of applied methods and ways to solve the expert task, since “determining a method to perform an examination (choice of certain methodologies (research methods)) is the expert’s competence”29.

Such advisory opinion provided by a specialist will serve as an additional, indirect tool for the authorized person or body to assess forensic expert conclusion in an integrated and meaningful way. Based on a comprehensive assessment of forensic expert conclusion, it is possible to make a certain procedural decision.

It is proposed to supplement Part 2 of Article 71 of the Criminal Procedural Code of Ukraine with provisions that a specialist may be involved to “provide advisory opinion on technical feasibility and expediency of applying certain methodologies (methods, techniques) to solve specific tasks”.

Conclusions

Forensic expert conclusion which is a source of evidence stipulated by the Criminal Procedural Code of Ukraine, provided on the basis of certain specific expertise enables to identify circumstances related to fact in proof, as well as other circumstances that will be significant for court proceedings. Forensic expert conclusion as the most suitable form of specific expertise application, in most cases is a decisive means of evidence while pre-trial investigation or trial. However,
forensic expert conclusion, like any other evidence, does not have a predetermined value, so it should be examined on the basis of the principle of integrated evaluation of evidence based on the inner conviction of criminal proceeding participants. Verifying and assessing the validity of forensic expert conclusion should prevent the possibility of using poor quality research results.

It is proven that the analysis of forensic expert conclusion and its assessment pose significant challenges for people who do not possess specific expertise. Determining credibility of forensic conclusion results is the result of complex cognitive activities which are primarily associated with verifying validity and correctness of conclusions. In our opinion, effective tools for verifying forensic expert conclusion are the interrogation of an expert and the appointment of a re-examination or additional examination.

It is suggested to supplement Part 2 of Article 71 of the Criminal Procedural Code of Ukraine with provisions that a specialist may be involved to “provide advisory opinion on technical feasibility and expediency of applying certain methodologies (methods, techniques) to solve specific tasks”.

Проблемні аспекти використання висновку експерта за результатами судової експертизи нещасних випадків електротравмування
Олег Мешков

Розглянуто актуальну та дискусійну тему використання висновку експерта за результатами судової експертизи нещасних випадків електротравмування.

Метою статті є аналіз проблемних питань, що виникають під час оцінки висновку експерта за результатами досліджень випадків електротравмування, і розроблення пропозицій щодо їх вирішення.

Оцінка та перевірка висновку експерта (як одного із джерел доказів) є неодмінною умовою неупередженості, об’єктивності й усебічності проведення розслідування в межах кримінального провадження та судового розгляду справи. Оцінка та перевірка висновку складаються з вирішення двох загальних груп питань: 1) процесуальна оцінка; 2) змістова оцінка.

Складність правильної змістової оцінки висновку експерта з боку слідчих органів чи суду зумовлена тим, що вони не мають спеціальних знань у певній галузі науки і техніки. Зауважено, що вирішення такого питання особливо ускладнено через відсутність апробованих методик або під час застосування нових видів експертизи.

Визначено шляхи вирішення окремих складних аспектів змістової оцінки висновку експерта з боку слідства чи суду, запропоновано внести певні зміни до процесуального законодавства щодо незалежного рецензування висновку експерта.

Ключові слова: судова інженерно-технічна експертиза; електротехнічна експертиза; експертиза з безпеки життєдіяльності; нещасні випадки, пов’язані з електротравмуванням; експертиза як джерело доказів.
Сложность правильной оценки, а также проверки достоверности и научной обоснованности заключения эксперта со стороны следствия и суда обусловлена тем, что заключение — это умозаключение эксперта, сделанное на основании специальных знаний в определенной области науки и техники. Такими знаниями следователь и/или суд не обладают. Зачастую они не могут объективно оценить и проверить содержание заключения на предмет правильного применения методики, использованных способов и методов решения задания. Подчеркивается, что решение такого вопроса следствием или судом представляет особую сложность в отсутствие апробированных методик или же при проведении новых видов экспертиз.

В статье приведены отдельные аспекты проверки установленных в заключении фактических обстоятельств на согласованность их с иными обстоятельствами и доказательствами по делу. Акцентировано внимание, что проверить факты, установленные в процессе исследования нечастных случаев, связанных с электротравмированием, на согласованность с другими доказательствами по делу часто невозможно, особенно если экспертиза устанавливает такие фактические обстоятельства, которые иным образом установить невозможно, либо когда экспертиза устанавливает определенные элементы состава преступления.

Определены пути решения отдельных сложных аспектов оценки содержания заключения эксперта со стороны следствия или суда, предложено внести определенные изменения в процессуальное законодательство.

**Ключевые слова:** судебная инженерно-техническая экспертиза; электротехническая экспертиза; экспертиза безопасности жизне деятельности; нечастные случаи, связанные с электротравмированием; экспертиза как источник доказательств.

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