The Issue of Personal Safety During Forensic Examinations Involving Violation of Health and Work Safety Requirements

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The primary focus of this paper is on the absence of relevant criteria for determining personal safety breaches by victims of accidents in current foreign and national methodologies and reference literature on the conduct of forensic examinations involving violation of health and work safety requirements. The Article Purpose is to define signs of employees' non-compliance with personal safety requirements that have led to accidents, with a view to establishing factual circumstances of failure to comply with regulatory requirements during forensic examinations involving violation of health and work safety requirements. To achieve this goal, the method of systemic-structural analysis has been employed. During forensic examinations involving violation of health and work safety requirements, research is conducted to establish facts of non-compliance with corresponding legal regulations and any causal link between such non-compliance and the occurrence of an accident, as well as to identify those responsible for such violations. These forensic examinations are carried out to determine facts and circumstances related

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to victims' adherence to/failure to observe personal safety measures. Where there is no evidence that employees failed to observe personal safety measures, forensic experts are free to interpret actions or inaction by victims as a result of their own negligence. This also results in ambiguous interpretations of the same initial data used in research, resulting in fundamentally contrasting opinions. Based on findings of forensic examinations conducted in various forensic expert institutions, patterns have been identified that led to accidents resulting from personal negligence of employees. Signs of employees' disregard for personal safety have been identified and schematically illustrated; these will contribute to the development of appropriate research methodologies and methods for establishing factual circumstances of non-compliance with regulatory requirements when conducting forensic examinations involving violation of health and work safety requirements.

Keywords: *forensic examinations involving violation of health and work safety requirements; personal safety; obvious danger; disregard for personal safety.*

Research Problem Formulation

When conducting forensic examinations involving violation of health and work safety requirements, research is undertaken to determine whether there has been a failure to comply with the requirements of legal regulations and whether there are cause-and-effect relationships between such non-compliance and the occurrence of an event; persons responsible for these breaches are also identified.

The purpose of this research is to establish how well employees in question have complied with or failed to comply with personal safety regulations.

Art. 14 of the Law of Ukraine: *On Labor Protection* [1] stipulates Art. 14 of the Law of Ukraine: *On Labour Protection* sets out an employee's obligations to comply with labour protection regulations, specifically they are expected to take care of their own safety and health in the course of any work or while on site. Furthermore, this article imposes direct liability on the employee for breaching the aforementioned regulation.

Unfortunately, as of today, current methodologies for conducting forensic examinations in the field of 10.5: *Forensic examinations involving violation of health and work safety requirements* do not specify signs of disregard for personal safety by accident victims. However, they are required to be listed in order to establish factual circumstances of failure to comply with health and work safety regulations.

A lack of evidence that employees neglected their own safety suggests that forensic experts, at their sole discretion, attribute actions or inaction of victims to their own negligence, thereby demonstrating that there is no uniform approach to conducting such research.

1 Про охорону праці : Закон України від 14.10.1992 р. № 2694-XII (зі змін. та допов.). URL: https://zakon.rada.gov.ua/laws/show/2694-12#Text (date accessed: 27.01.2026).

Article Purpose

Determine signs of employees' failure to observe personal safety regulations so that they can be subsequently used in forensic examinations involving violation of health and work safety requirements.

To fulfil this goal, it is essential to:

- Analyse whether current methodologies for conducting forensic examinations involving violation of health and work safety requirements contain definitions of signs of employees' failure to observe work safety regulations.
- Elaborate on research findings presented in experts' opinions, revealing employees' disregard for their own safety.
- Identify signs indicating employees' failure to observe health and safety regulations.
- Illustrate signs of employees' failure to comply with health and safety regulations.

Research Methods

To achieve this goal, the method of system-structural analysis has been employed.

Analysis of Essential Researches and Publications

A methodology proposed by O. Shmereho et al. [2] sets forth a framework for determining causality surrounding an event in circumstances where causes (if there are more than one) stem from a single chain of events (*see Fig. 1*).

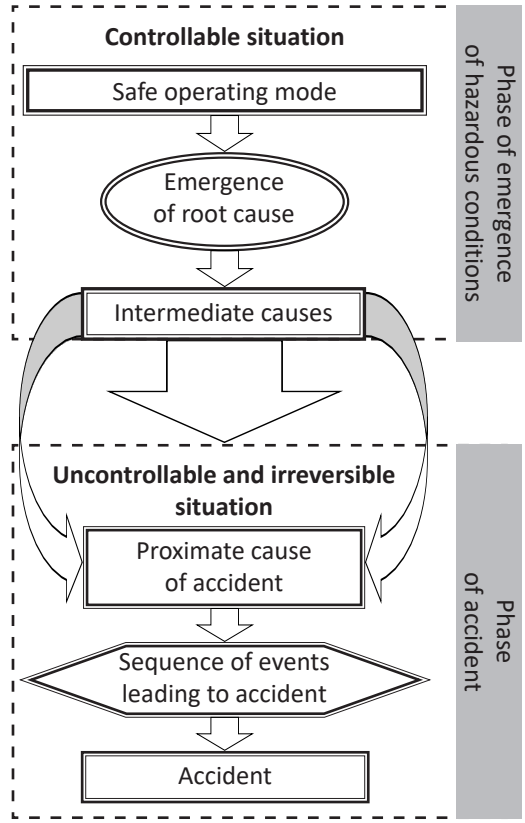

Fig. 1. Causality surrounding accidents

According to this methodology, determination of causality is heavily dependent on the principle that *"a person's action is to be recognised as a mandatory condition for changes that have occurred in external world; otherwise, had that action not taken place, the change would not have occurred"* [3].

A methodology developed under the guidance of V. Sabadash provides the same scheme and specifies that direct cause-and-effect relationships should be complemented by inadequate actions on the

2 Шмерего О. Б. та ін. Методика проведення судових експертиз з безпеки життєдіяльності / КНДІСЕ Мін'юсту України. Київ, 2019. 200 с. // Реєстр методик проведення судових експертиз : вебсайт. Реєстр. код 10.5.13 від 28.01.2021 р. URL: https://rmpse.minjust.gov.ua/search (date accessed: 27.01.2026).

3 Там само.

part of an employee involved in an event. For example, where the employee's performance of assigned operational tasks in line with established rules and regulations would almost certainly have prevented such an event from occurring [4]. If it resulted from a combination of breaches of requirements stipulated in statutory and regulatory acts on health and work safety committed by more than one person, then the direct causality factor should be supplemented by those violations that, if selectively and hypothetically removed from the specified set, would have prevented the occurrence of an emergency situation in question.

According to a methodology developed by O. Mieshkov et al [5]., the majority of emergencies (accidents and incidents) in the workplace occur as a result of the following causes: *organisational* (actions by heads, officials and other staff members relating to production processes and workplaces that fail to comply with health and work safety requirements; positioning of equipment and workers, etc.), *technical* (usually resulting from improper technical condition of equipment, machinery, mechanisms, tools, production facilities, protective and monitoring equipment, etc., or from breaches of rules governing technical operation of production facilities) and *health and hygiene-related* (various environmental factors associated with production capable of causing harm to the human body: high or low temperatures, industrial noise or vibrations, gas or dust contamination of workplaces and premises, etc.).

The aforementioned methodologies show no signs of employees failing to observe personal safety.

For instance, the requirement to wear safety helmets on construction sites is laid down in legal regulations on health and work safety (orders, instructions, etc.). Therefore, wearing a safety helmet is a regulatory requirement. However, it is sometimes interpreted as a disregard for personal safety, which is flawed assertion, since the absence of a safety helmet does not expose one to an obvious danger (e.g., in the event of objects falling on the head), but rather increases the likelihood of injury should such a danger occur.

A methodology proposed by O. Konovalova et al. [6] indicates that an accident and its consequences can stem from a violation of health and work safety requirements governing the occurrence of such accidents/incidents.

Only those actions by persons involved in an accident that directly triggered a hazardous working situation, in which conditions arose for a person to be exposed to a dangerous occupational hazard or harmful factor, will be in a direct cause-and-effect relationship. Furthermore, this

4 Розробка методики дослідження нещасних випадків, пов'язаних з невиконанням виробничих вимог на виробництві ; звіт про НДР (остат.) / кер. В. В. Сабадаш. Реєстр. № 0118U004616, 0220U102670. Харків, 2019. 65 с.

5 Мєшков О. О. та ін. Методика комплексного експертного дослідження нещасних випадків, повязаних з електротравматизмом / ННЦ «ІСЕ ім. Засл. проф. М. С. Бокаріуса» Мін'юсту України. Харків, 2019. 36 с. // Реєстр методик проведення судових експертиз : вебсайт. Реєстр. код 10.5.15 від 28.01.2021 р. URL: https://rmpse.minjust.gov.ua/search (date accessed: 27.01.2026).

6 Коновалов О. Д. та ін. Методика проведення судової експертизи з безпеки життєдіяльності та охорони праці / ДніпроНДІСЕ Мін'юсту України. Дніпро, 2021. 36 с. // Там само. Реєстр. код 10.5.17 від 28.04.2023 р. URL: https://rmpse.minjust.gov.ua/search (date accessed: 27.01.2026).

methodology does not specify criteria for employees' failure to observe personal safety.

In another methodology by V. Sabadash et al. [7], it is stipulated that actions of specific officials bear a causal link to a hazardous event if such actions are unsuitable (contradict regulatory requirements), have led to hazardous placement of equipment and dangerous operating conditions, as well as the performance of work in violation of established operational procedures, the admission of untrained staff to carry out operations, etc. All of the above contribute to a probable occurrence of a hazardous event or to its occurrence.

Inaction on the part of certain officials is causally connected to a hazardous event and is perceived as a prerequisite for transforming a cause into an effect. Such inaction is deemed impermissible, given that regulatory requirements governing similar situations stipulate that the official must take steps in order to identify the presence or possibility of a specific hazard and to implement appropriate preventive measures (for example, use of personal or collective protective equipment). Should this person fail to take corresponding measures, it may lead to a hazardous event due to neglect of safety precautions. This procedure also shows no signs of employees failing to observe personal safety measures.

Analysis of Ukrainian methodologies suggests that they only contain an algorithm for establishing cause-and-effect relationships between the occurrence of an event and an employee's actions. However, they do not explicitly state which criteria should be used when determining instances of employees' failure to observe personal safety regulations.

Foreign literature presenting studies into the causes of accidents also do not cite any evidence of employees disregarding personal safety. Rather, these papers focus on the human factor and how it contributed to technical malfunctions leading to accidents [8]. Considerable attention has

7 Сабадаш В. В. та ін. Методика встановлення причинно-наслідкових зв'язків та зв'язків обумовленості при вирішенні ситуаційних завдань в інженерно-технічних експертизах / ННЦ «ІСЕ ім. Засл. проф. М. С. Бокаріуса» Мін'юсту України. Харків, 2020. 40 с. // Там само. Реєстр. код 10.5.16 від 28.01.2022 р. URL: https://rmpse.minjust.gov.ua/search (date accessed: 27.01.2026).

8 Joe-Asare Th., Amegbey N., Stemn E. Human Factor Analysis Framework for Ghana's Mining Industry. *Ghana Mining Journal*. 2020. Vol. 20. No. 2. Pp. 60–76. DOI: 10.4314/gm.v20i2.8 (date accessed: 27.01.2026) ; Abdillah G., Caraka M. K., Arioyudanto R. A., et al. Studi Kasus Penyebab Kecelakaan Kerja Fatal di Tambang Mineral: Analisis Faktor Manusia, Teknis, dan Lingkungan. *Journal of Educational Innovation and Public Health.* 2024. Vol. 2. Is. 2. Pp. 42–51. DOI: 10.55606/innovation.v2i2.2843 (date accessed: 27.01.2026) ; Zhao D. Discussion on Accident Management Based on Foreign Accident Investigation. *Advances in Petroleum Exploration and Development.* 2020. Vol. 20. No. 1. Pp. 68–71. DOI: 10.3968/12105 (date accessed: 27.01.2026) ; Fuentes-Bargues J. L., Sánchez-Lite A., Gonzalez-Gaya C., et al. A study of situational circumstances related to Spain's occupational accident rates in the metal sector from 2009 to 2019. *Safety Science*. 2022. Vol. 150. Art. 105700. DOI: 10.1016/j.ssci.2022.105700 (date accessed: 27.01.2026) ; Chammout B., Ahmed M. O., El-adaway I. Exploring the Root Factors Impacting Work Zone Accidents: A Mixed-Methods Study. *Construction Research Congress 2024: Health and Safety, Workforce, and Education* (Des Moines, Iowa; March 20–23). 2024. Pp. 406–416. DOI: 10.1061/9780784485293.041 (date accessed: 27.01.2026) ; Vigneshkumar C., Salve U. R. A scientometric analysis and review of fall from height research in construction. *Construction Economics and Building.* 2020. Vol. 20. No. 1. Pp. 17–35. DOI: 10.5130/AJCEB.v20i1.6802 (date accessed: 27.01.2026).

been paid to human error as a trigger for accidents. There is a human factor in any accident, which is rooted in a lack of training, supervision of staff members, and violations of safety procedures.

A study by Ch. D. Nwankwo et al. [9] conceptualizes the human factor and human error as causes of disasters in the oil and gas industry.

N. M. Shahar et al. analyse an employee's negligent behaviour as a cause of an accident [10].

A research paper by Sh. N. A. S. Zakaria et al. discusses how workers' refusal to use personal fall protection equipment may result in accidents [11].

A work by B. M. Hester and P. I. Fusch addresses issues of personal safety in cases of distractions, personal matters, stress, carelessness, and safety-related errors [12].

Sh. Ahmed [13] lists the following as the causes of accidents involving personal safety: a lack of expertise, experience or proper training in the use of equipment, irregular supervision by managers, and inadequate safety policies adopted by senior leadership.

J. F. S. Tenorio attributes the causes of most workplace accidents to employee carelessness, laziness, poor posture (leading to back injuries), a lack of financial incentives, faulty or outdated protective equipment, and exposure to corrosive chemicals [14].

A study by O. S. Williams et al. [15] elaborates on measures to prevent accidents, including monitoring compliance with safety standards and use of personal protective equipment (safety belts, safety nets, etc.), on adequate supervision to ensure proper placement of devices and equipment, on ongoing training in the choice and use of equipment and tools, design, and on regular inspection of equipment.

9 Nwankwo Ch. D., Arewa A. O., Theophilus S. C., Esenowo V. N. Analysis of accidents caused by human factors in the oil and gas industry using the HFACS-OGI framework. *International Journal of Occupational Safety and Ergonomics.* 2022. Vol. 28. Is. 3. Pp. 1642–1654. DOI: 10.1080/10803548.2021.1916238 (date accessed: 27.01.2026).

10 Shahar N. M., Abas N. H., Basirun N. F., Memon M. H. Perspectives of Contributing Factors and Prevention Measures of Struck-by Accidents in from Experienced Safety Personnel. *International Journal of Sustainable Construction Engineering Technology.* 2023. Vol. 14. No. 5. Pp. 468–475. DOI: 10.30880/ijscet.2023.14.05.039 (date accessed: 27.01.2026).

11 Zakaria Sh. N. A. S., Abas N. H., Ta'at N. H. M., et al. Causal Factor Analysis of Fatal Accidents in JohorConstruction Industries Based on Korean Occupational Safety and Health Agency Classification. *International Journal of Integrated Engineering*. 2023. Vol. 15 (6). Pp. 135–142. DOI: 10.30880/ijie.2023.15.06.015 (date accessed: 27.01.2026).

12 Hester B. M., Fusch P. I. A Near Miss: The Lived Experiences of Telecommunication Technicians' Injurious Accidents and Near Misses. *The Qualitative Report*. 2020. Vol. 25. No. 11. Art. 3. Pp. 3810–3829. DOI: 10.46743/2160-3715/2020.4590 (date accessed: 27.01.2026).

13 Ahmed Sh. Causes of Accident at Construction Sites in Bangladesh. *Organization, Technology and Management in Construction.* 2019. Vol. 11 (1). Pp. 1933–1951. DOI: 10.2478/otmcj-2019-0003 (date accessed: 27.01.2026).

14 Tenorio J. F. S. Analysis of personal and work-related factors contributing to construction industry accidents in Peru. *Revista del Instituto de Investigación de la Facultad de Ingeniería Geológica Minera Metalúrgica y Geográfica*. 2023. Vol. 26. No. 51. Art. e25265. 9 p. DOI: 10.15381/iigeo.v26i51.25265 (date accessed: 27.01.2026).

15 Williams O. S., Hamid R. A., Misnan M. S. Causes of building construction related accident in the south-western states of Nigeria. *International Journal of Built Environment and Sustainability.* 2019. Vol. 6. Is. 1. Pp. 14–22. DOI: 10.11113/ijbes.v6.n1.313 (date accessed: 27.01.2026).

A research paper by B. Fabiano et al. is focused on the human factor influence as a cause of accidents [16].

Analysis of foreign information sources has revealed that they likewise lack evidence testifying to employees' failure to observe personal safety measures.

A lack of evidence testifying to the fact that employees have failed to observe personal safety measures means that forensic experts interpret actions or inaction by accident victims exclusively as the result of their own negligence. Consequently, it is possible to arrive at radically opposing conclusions based on the same initial research data.

Main Content Presentation

An analysis of case-based scenarios completed at Kyiv Scientific Research Forensic Center of the Ministry of Internal Affairs of Ukraine and Ukrainian Research Institute of Special Equipment and Forensic Expertise of the Security Service of Ukraine (as part of forensic examinations involving violations of health and work safety requirements) between 2015 and 2025 has enabled us to identify two sets of patterns associated with personal safety of accident victims: awareness of common hazards and knowledge of potential hazards in the course of undertaking certain activities.

Cases where victims had disregarded their personal safety included cases where a person was aware of obvious dangers (e.g., significant elevation changes, open voids in structures or pits in the ground, open flames, rotating mechanisms on various types of equipment, etc.).

A good example is monument cleaning. As can be observed in Fig. 2, a worker is standing on the monument high above the ground. In addition, he is not using any personal fall protection equipment (a safety harness or safety railing). This shows that this worker is disregarding his own personal safety, as, whilst being aware of the danger (the potential for a fall from height), he nevertheless continues to work at height without taking any measures to protect himself against a possible fall.

Another example of victims' disregard for their personal safety is working from a bucket of a *JCB* telescopic loader (telehandler). Fig. 3 clearly shows two employees working at height without any fall prevention equipment.

One of the workers is standing one foot on the edge of the bucket and the other on the slope where material laying works are carried out. It shows that workers are neglecting their work and health safety: they must be aware of the obvious danger posed by the height, yet they ignore it and just keep working. This type of behaviour increases the likelihood of an accident resulting from a fall from a height.

Let us provide another instance. A team member from the *Dzvinochok* household waste collection service who neglects his personal safety whilst dumping trash from containers into a specialised vehicle equipped with a lifting device: the worker sits on the top of the truck body wall, at a significant height above the asphalt pavement, and the container is being moved into the truck using a lifting device. All this happens right next to the worker (*see Fig. 4*).

16 Fabiano B., Pettinato M., Currò F., Reverberi A. P. A field study on human factor and safety performances in a downstream oil industry. *Safety Science.* 2022. Vol. 153. Is. 2. Art. 105795. DOI: 10.1016/j.ssci.2022.105795 (date accessed: 27.01.2026).

Fig. 2. Performing work on the monument in violation of health and work safety requirements

Fig. 3. Working from the bucket of the JCB telehandler in violation of health and work safety requirements

The worker should have been aware of potential hazards: falling from the top of the truck body wall as a result of losing his balance, or being struck by a moving container.

Fig. 4. Performing work using lifting equipment in violation of health and work safety requirements

The provided examples demonstrate that actions of workers (such as performing works at height) are factors sufficient to cause an accident resulting from a fall from a height. This is evidence of a causal link between the workers' actions and the occurrence of an event (as opposed to incidental connection).

Therefore, one of the signs that workers are neglecting personal safety measures is an *understanding of common hazards*: an employee is aware (or should be aware) of an obvious danger threatening their life or health, however, they refuse to respond to these circumstances.

The second set of patterns surrounding personal safety of accident victims concerns workers' awareness of hidden hazards, including of dangerous conditions associated with operation of industrial production equipment.

Let us illustrate it with an example of an accident that took place at a paper mill. An employee had been learning how to operate a paper making machine safely, had attended relevant safety briefings and had passed a test on health and work safety. He should therefore have been aware of all safety requirements that must be followed when working on such machinery, including of the rule prohibiting standing on the machine's rotating parts, even when it is not in operation. The worker had climbed onto the shaft of the paper making machine to clear a paper jam on another shaft, but the shafts began to rotate and trapped the worker, resulting in fatal injuries (*see Fig. 5*).

Fig. 5. Working on a paper making machine
in violation of health and work safety requirements

Another example is an incident that happened at a postal service enterprise. The worker had been briefed on health and work safety regulations, particularly on safety measures to be observed when unloading goods (including a ban on moving mesh containers by pushing them towards oneself). However, during the transportation of one of the containers, a worker was pushing it towards him (*see Fig. 6*). As the lorry's hydraulic tail-lift did not fit tightly against the concrete surface of the loading dock, the container tipped over and injured the worker.

Fig. 6. The accident at a postal service enterprise resulting from safety violations

Another accident took place at a wood processing plant. Prior to this accident, a worker had undergone specialised health and work safety training; he had also been instructed on not to stand near timber log stacks when they were being moved by lifting equipment. While the crane was moving the logs, the worker entered the restricted area; the logs crashed down from the stack, pinned the worker down and caused him severe injuries (*see Fig. 7*).

Summary: the provided examples illustrate how employees' failure to comply with safety requirements can result in accidents involving these staff members.

Fig. 7. Circumstances of the accident at a timber processing plant involving safety violations

Signs of employees' failure to observe personal safety measures are schematically represented in *Fig. 8*.

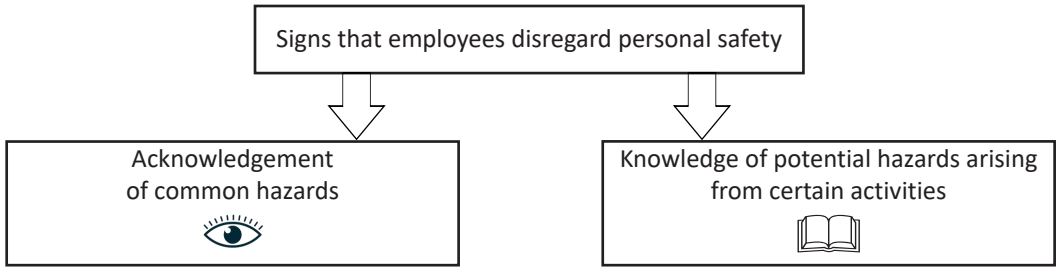

Fig. 8. Scheme of signs indicating employees' failure to observe personal safety measures

Conclusions

Having analysed Ukrainian methodologies and foreign information sources, it can be concluded that they do not contain evidence of employees disregarding personal safety. We outlined the issues stemming from a lack of such signs, which are inextricably linked to the absence of corresponding procedures and methodologies for conducting research within the scope of forensic examinations involving

violation of health and work safety requirements. Approaches to addressing issues pertaining to the research on failure to observe personal safety measures have been proposed. Identifying signs of employees' failure to adhere to personal safety regulations is crucial for the smooth conduct of forensic examinations involving violation of health and work safety requirements. Signs of employees' disregard for personal safety have been identified and illustrated schematically.

Питання дотримання особистої безпеки під час проведення судових експертиз безпеки життєдіяльності та охорони праці

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Увагу акцентовано на відсутності в чинних іноземних та національних методиках і довідковій літературі з питань проведення судових експертиз безпеки життєдіяльності та охорони праці ознак, за якими необхідно встановлювати факти недотримання особистої безпеки потерпілими від нещасних випадків. Мета — визначити ознаки фактів недотримання працівниками особистої безпеки, що спричинили нещасні випадки, з метою встановлення фактичних обставин недотримання нормативних вимог під час проведення судових експертиз безпеки життєдіяльності та охорони праці. Для досягнення поставленої мети застосовано метод системно-структурного аналізу. Під час проведення судових експертиз безпеки життєдіяльності та охорони праці проводять дослідження з метою визначити факти недотримання вимог нормативно-правових актів, які перебувають у причиново-наслідковому зв'язку з настанням нещасного випадку, а також осіб, винних у такому недотриманні. Проведення цих досліджень пов'язане з визначенням фактів та обставин дотримання / недотримання особистої безпеки потерпілими. Відсутність ознак недотримання працівниками особистої безпеки призводить до того, що судові експерти на власний розсуд визначають дії або бездіяльність постраждалих осіб як підсумок їх необережності. Це так само призводить до неоднозначного трактування тих самих вихідних даних для проведення досліджень, наслідком чого є кардинально відмінні висновки. За результатами проведених досліджень, що ґрунтуються на практиці проведення досліджень у різних експертних установах, виокремлено закономірності, що призвели до настання нещасних випадків, спричинені особистою необережністю працівників. Визначено та схематично відображено ознаки факту нехтування особистою безпекою працівниками, що надалі сприятиме розробленню відповідних методик і методів дослідження з метою встановлення фактичних обставин недотримання нормативних вимог у межах проведення судових експертиз безпеки життєдіяльності та охорони праці.

Ключові слова: *судова експертиза безпеки життєдіяльності та охорони праці; особиста безпека; явна небезпека; нехтування особистою безпекою.*

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Participants

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writing and editing, and assume responsibility for its content and interpretation.

Declaration of Competing Interest

The authors declare no conflict of interest.

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