

**A. Blahodarnyi**<sup>1</sup>,  
 orcid.org/0000-0001-5326-3646,  
**I. Koziakov**<sup>2</sup>,  
 orcid.org/0000-0002-5641-7388,  
**L. Strelbytska**<sup>1</sup>,  
 orcid.org/0000-0003-2339-9088,  
**M. Strelbytskyi**<sup>1</sup>,  
 orcid.org/0000-0002-9991-0199

1 – National Academy of Security Service of Ukraine, Kyiv, Ukraine, e-mail: [blagek2015@gmail.com](mailto:blagek2015@gmail.com)  
 2 – Kyiv National Economic University named after Vadym Hetman, Kyiv, Ukraine

## REGULATORY CONTENT OF THE CATEGORY “SAFETY OF MINING WORKS”

**Purpose.** To study the main elements of mining safety, as well as to formulate the definition of the concept of mining safety for its use in legal regulations of mining relations from the viewpoint of scientific literature and the norms of current legislation.

**Methodology.** The results were obtained after applying a set of methods: a) general philosophical methods (dialectical, anthropological); b) general scientific methods (abstraction, analysis and synthesis, system analysis, classification); c) legal methods (historical and legal, comparative legal, semantic and legal).

**Findings.** Based on the analysis of the main categories of general security theory and their application in the legislation of Ukraine, the etymology of the legal term “security” is studied and it is shown that the definition of this concept depends on the context of the normative legal act in which it is used. This necessitates the improvement of the conceptual apparatus of mining legislation and the development of the category “mining safety”. It is argued that unification of this legal category and clarification of its authentic definition will contribute to the achievement of unity and consistency of the current mining legislation, the proper regulation of public relations to ensure protection of Ukraine’s national interests in the field of subsoil use. The necessity of expanding the list of possible hazards of geological study and subsoil use provided for by the current legislation was substantiated. It is proposed to consolidate the authors’ definition of mining safety in the corresponding paragraph of Article 1 of the Mining Law of Ukraine.

**Originality.** As a result of lexical and legal analysis, it was concluded that the definition of “security” depending on the context of the legal act in which it is used and the characteristics of the subject of legal regulation of certain social relations is defined as: security; security status; provision (regulatory compliance); set of measures; aggregate of nonuniform resources. Taking into account the geospheric characteristics of subsoil, as well as the peculiarities of hazard occurrence and manifestation during subsoil use, the authors put forward a classification of hazards manifestation during mining operations (geomorphological, lithospheric, geodynamic, gas-dynamic, hydrodynamic, geopathogenic, microbiological hazards, as well as the hazards of mineral nanoparticles). The additions are substantiated to the current legislation (part 1 of Article 1 of the Mining Law of Ukraine) with the following definition of the safety of mining operations: protection of vital interests of a person, society and the state from negative manifestations of geomorphological, lithospheric, geodynamic, gas-dynamic, hydrodynamic, geopathogenic, microbiological and other factors in the course of processes aimed at carrying out, securing and maintaining mine workings and withdrawing mining rocks.

**Practical value.** The practical significance of the results is based on the fact that they can be used by the subjects of legislative initiative when improving the provisions of the current legislation of Ukraine, as well as by practical workers to organize and conduct mining operations.

**Keywords:** *safety, hazards of subsoil use, safety of mining operations, law, norm and definition*

**Introduction.** In the process of developing regulatory environment for mining activities relations, there arises the problem of formalizing safety law issues, in particular, during mining operations, as well as construction and operation of mining enterprises. In law, formalization is considered a mandatory element of the process of lawmaking. Within its framework, the law acquires a certain form while expressing the desired model of relations in a specific, generally binding structure and its formalizing in written legal acts with the help of specific legal and technical means, in particular, in legal terminology.

In the general system of legal regulation, mining law is characterized by secondary nature as for social interaction, so it is based on the principle of integration of interdisciplinary approaches. First of all, this is manifested in the terminology of the legal entity under consideration, which, unlike classical branches of law, is not limited to purely legal definitions, but is saturated with natural science concepts and categories [1]. Consequently, the quality of regulatory environment of mining relations directly depends on the state of theoretical development of the concepts used by law-makers in the formation of legislation.

The study of historiographic sources of the science of mining law shows that since the 19<sup>th</sup> century, which was marked by the development of the mining industry, the main contribution to the formation of mining legislation has been made by engineers who were involved in the state management of min-

ing. This feature is also inherent in the modern law-making. In addition, the process of forming the conceptual and terminological apparatus of legislation that regulates relations in the field of ensuring the safety of mining operations, construction and operation of mining enterprises is significantly influenced by specific scientific, primarily mining and geological vocabulary, which in this case becomes decisive. But this influence is associated with contradictions and difficulties in determining the concepts and legal content of the relevant objects of legal regulation. In the context of our research, the situation of definition insufficiency is explained by deficient theoretical development of the fundamental concepts of safety (accidents, challenges, threats, disasters, hazards, risks, and so on).

So, we must ascertain the problem of insufficient consistency of modern mining legislation of Ukraine, insufficient development, incompleteness, illogicality, and sometimes complete lack of definitions necessary for effective legal regulation of relations in the field of ensuring the safety of mining operations, construction and operation of mining enterprises.

**Literature review.** In the modern scientific world, it is difficult to find legal studies that, at least indirectly, did not consider the issue of forming a conceptual and categorical apparatus. In the legal science, the works by V.I. Andreitsev, G.I. Balyuk, A.A. Gritsan, R.S. Kirin, N.R. Malysheva, B.G. Rozovsky, V.S. Semchik, A.V. Surilova, V.K. Filatova, A.P. Shemyakov, Yu.S. Shemshuchenko and other scientists are devoted to the development of the main definitions of legislation regulating mining relations.

**Unsolved aspects of the problem.** It should be recognized that many issues related to the definition of the basic concepts of mining law that accompany the genesis of legal aspects of modern mining doctrine have remained outside the scope of these researchers; they do not sufficiently use foreign experience of law-making in the field of regulating public relations as for the study, use and protection of mineral resources.

**Purpose.** The purpose of the article is a comprehensive study of the main elements of mining safety, as well as the definition of the concept of mining safety for its further use in the legal and regulatory environment of mining relations.

**Methods.** The obtained results are based on a set of methods: a) general philosophical (dialectical, anthropological); b) general scientific (abstraction, analysis and synthesis, system analysis, classification); c) legal (historical-legal, comparative-legal, semantic-legal).

**Results.** There is no doubt that unambiguity in terms definition, their perception and interpretation is the most important condition for the development and use of theoretical knowledge. After all, scientists and practitioners should clearly understand what is being discussed, what issue is under consideration, and what meaning this or that concept contains. Perhaps, out of all sciences, this problem is most crucial for law. This is explained by the fact that understanding, awareness and correct interpretation of the essence of legal categories form a holistic view of a corresponding phenomenon of legal reality, and also reflect its purpose for scientific and practical activities.

However, if legal science as a whole does not have a clear understanding of a certain category, or uses different terms to define the same social phenomena, this should not be considered a disadvantage. Rather, it is an indicator of the development of conceptual knowledge, an indicator showing that the process of forming a legal theory has not yet been completed. We agree that the multivariance of terms and their interpretation in the relevant field of legal knowledge is an indicator of the level of its formation and development. Therefore, we apply this context to the existence of differences in the definition of terms (categories) and their interpretation in various scientific studies conducted in the field of mining law.

Failure to comply with the requirements of unambiguity of concepts leads to unfounded conclusions and recommendations and, thus, deprives legal practice of the necessary theoretical basis. Thus, the most typical defects in legislative definitions are inaccuracy, abstractness, illogicality, ambiguity, and so on. In order to build correct logical connections of interrelated and interdependent concepts, the authors start the formation of the legal category “mining safety” with analyzing the main categories of general safety theory.

In modern scientific findings the position of researchers depends on the specifics and conditions of their consideration of the security phenomenon and its types: national, state, military, public, environmental, information, and others. The study on monitoring scientific sources allowed us to state the fact that most researchers understand safety as the absence of danger. This understanding is based on the etymological aspect of the term safety. One of the lexicological sources provides the definition, according to which security is a state when someone or something is not in danger.

Analysis of the definitions of this concept developed in domestic scientific research on national security problems, based on the etymology of this word, revealed the same semantic inaccuracy. The reason for it lies in the widespread use of the works by Russian researchers, who initially formed the conceptual and categorical apparatus of security science. These works are characterized by the fact that when defining safety as the absence of danger, the concept of “nebezpeka (*danger* in Ukrainian)” is contrasted with “bezpeka (*safety* in Ukrainian)”. This is due to the presence of a negative prefix “bez (*without* in Ukrainian)” in the word “bezpeka (*safety* in Ukrainian)”. Of course, this approach is quite acceptable for the semantics of the Russian language.

However, Ukrainian word formation has different rules. First, the word “opasnost (*danger* in Russian)” in the Ukrainian language corresponds to the word “nebezpeka (*danger* in Ukrainian)”, in the structure of which, as we can see, there are two negative prefixes: “ne” and “bez”. Secondly, in contrast to the morphology of the Russian language, in which the primary (root) word is “danger” and its derivative “safety”, the etymology of Ukrainian words is different. Here, the primary word is “bezpeka (*safety*)”, and its derivative is “nebezpeka (*danger*)”. At first glance, this should contradict the logic of the formation of these concepts, since danger is the primary concept, and protection and security are always secondary. The reason for this may be rooted in the use of the common base “pek”, which is the personification of danger. That is why the Ukrainian word “bezpeka/safety” consists of two parts of the prefix “bez/without” and the root “pek”, which means absence of influence of this negative character, which represented evil in ancient times. Accordingly, the word “nebezpeka (*danger* in Ukrainian)” by combining the parts “ne (*not* in Ukrainian)” and “bez (*without* in Ukrainian)” indicates that the event or action did not occur without the participation of something evil.

It is also worth mentioning that the Ukrainian etymology of these words coincides with the concept about Man and Society safety as described in the philosophy of Ancient Greece. This concept did not go beyond the ordinary and was interpreted as the absence of danger or evil, which implied that the state of security corresponded to prevention and avoidance of harm (damage).

The analysis of theoretical studies and empirical examination of law-making practice confirm the conclusion that facts which are justified and proved in doctrinal context are not always acceptable in pragmatic and normative context. For example, in legal encyclopedic and dictionary literature, national security is defined as the state of safety of vital interests of an individual, society and the state from internal and external threats, or as a system of state measures aimed at protecting national interests, ensuring the safety of an individual, society, and the state from internal and external threats in all spheres of life.

Modern legislation is characterized by a wide contextual use of the word “safety/security”, although the interpretation of this term in regulatory legal acts is quite different. Lexical and legal research into norms and definitions that are represented in the current regulatory legal acts demonstrates that the legislative interpretation of the concept of security is carried out in the following sense:

1) protection – security is interpreted as an attribute of an object (system, equipment, process), its characteristic, property (ability) to resist a threat and prevent dangerous states (situations), to stay away from them;

2) state of being protected – safety is the state of an object (system, process), in which the possibility of a dangerous event or the occurrence of its adverse consequences is excluded within the limits of acceptable risk;

3) ensuring compliance with norms – safety characterizes a certain, primarily fixed in regulatory legal acts, conditions of an activity (process) under which the impact of adverse (dangerous) events and phenomena on the object is excluded (reduced);

4) a set of unified measures – security is considered as a system of measures that protect an object from danger (threats);

5) a set of heterogeneous means – security is represented as a synthesis of means, structures, devices, characteristics and indicators (including engineering, design, technical, architectural, technological and other solutions), which are taken into account and applied to prevent and reduce the number of accidents and the severity of their consequences.

It is obvious that the legislative (official) definition of the concept of “safety” depends on the context of the normative legal act in which it is used, and is interpreted taking into account the specifics of the object and subject of legal regulation.

In this regard, we recall paragraph 4 of Article 1 of the Law of Ukraine of June 21, 2018 No. 2469-VIII “On national security of

Ukraine” [2], which stipulates that national security means protection of state sovereignty, territorial integrity and democratic constitutional order and other vital national interests from real and potential threats. The legislator suggests that national interests of Ukraine should include vital interests of a person, society and the state, the implementation of which ensures the state sovereignty of Ukraine, its progressive democratic development, as well as safe living conditions and the well-being of its citizens.

The definition of national security enshrined in this norm-definition is significantly different from the one previously formulated in Article 1 of the Law of Ukraine of June 19, 2003 No. 964-IV “On the basis of national security of Ukraine” [3], in which this term was interpreted as “protection of vital interests of a person and citizen, society and the state, which ensures the sustainable development of society, timely identification, prevention and neutralization of real and potential threats to national interests in the spheres... use of mineral resources... minerals... if there are negative trends to create potential or real threats to the national interests”.

In this study, we proceed from the fact that safety in a modern man-made society is characterized not by the absence of danger, but by a state of security based on: 1) awareness of the existing complex of threats (hazards); 2) practical implementation of measures to prevent and stop these dangers.

The process of using mineral resources is no exception in this sense, and the applied regulatory measures should take into account all possible hazards – both real and potential – while determining the content of the legal category of the safety of mining operations as well as of construction and operation of mining enterprises. However, there is a significant definitive insufficiency in the mining legislation in this regard. According to the results of content analysis of the norms of the Mining Law of Ukraine [4], the word “safety/security” is used more than 50 times in various phrases, in particular: safety of mining operations conduct, safety while performing mining operations, safety of mining operations, and the like. At the same time, such categories as “safe operation of mining enterprises” and “safety of mining enterprises” are used in this context, and certain types of security in terms of environment, fire, radiation, and so on, are also indicated.

Despite this fact, the glossary of the Mining law of Ukraine does not contain a corresponding norm that would reveal the content of both – the general concept of “safety”, which would perform a service role in the conceptual apparatus of the law, and a specific definition of mining safety. However, it is defined neither by inter-sectoral nor industry safety rules that establish standards for safe mining operations, requirements for ventilation and emergency protection of mine workings, compliance with the dust and gas regime, industrial sanitation, labor and environmental protection (Safety rules for the development of ore and nonmetallic mineral deposits by underground method [5], Safety rules in coal mines [6], Labor protection rules for the development of mineral deposits in an open-pit way [7]).

It should be noted that Article 1 of this law [4] contains the norm-definition “especially dangerous underground conditions”, i. e. conditions in mines and mineries that are associated with the action of difficult-to-predict manifestations of geological and gas-dynamic factors that cause danger (*nebezpeka* in Ukrainian) to life and health of their employees (release and explosions of gas and dust, sudden emissions, rock impacts, collapses, spontaneous combustion of rocks, flooding of mineries, and so on).

It is important to note that this norm contains a list of negative factors stipulated in the legislation (formalized) that does not exhaust all types of hazards and threats faced by subsurface users. In particular, the safety of the mining industry is associated with the presence of physical, mechanical, biological, chemical and psychosocial risk factors [8]. Based on the fact that according to Article 4 of the Mining Law of Ukraine, ensuring the safety and health of people in particularly dangerous conditions is one of the objects of mining relations, we

believe that application of the most complete list of factors that cause danger will contribute to law-making.

When drafting this list, it is necessary to take into account, first, the geospheric uniqueness of mineral resources, which distinguishes them from other environmental objects; second, the typology of the mountain range properties which is used in mining; third, the grouping of characteristics inherent in the mineral resource studies coherent with the current scientific trends in mining and geological cycle; fourth, the specifics of the occurrence and manifestations of hazards in the process of using mineral resources.

So, taking into account the requirements of legal technology for creating legal acts and the specifics of forming legal terminology, we believe that the following classification is more complete in terms of regulating the safety of mining operations:

- geomorphological hazards (landscape disturbances, subsidence and surface shifts, landslides, cracks and sinkholes of the soil, other surface disturbances and transformations);

- lithospheric and ecological hazards (depletion of mineral resources as a result of exceeding the losses standards and depletion of minerals during mining; pollution and damage to mineral resources; changes in the geomechanical and geodynamic state of the mountain range; appearance of erosion forms, suffusion and karst formations; contamination of ground and underground waters, changes in their chemical composition as a result of man-inflicted violation of the exchange between aquifers; other consequences of negative geological environment);

- geodynamic hazards (man-made (induced) earthquakes, mine impacts, collapses and blockages of mine workings, stairs of ledges and destruction of quarry sides, well fractures, manifestations of abnormal geodynamics of the mountain range);

- gas dynamic hazards (gas and dust emissions; sudden emissions of gas and minerals; increased gas release, which worsens mine atmosphere; accumulation of gases dangerous to human health in mine workings and underground structures, in particular, radon group gases);

- hydrodynamic hazards (violations of the hydrological regime and the level of underground and ground water under the influence of anthropogenic activities, flooding of territories, flooding of mine workings, breakthroughs of water, clay, pulp and other harmful substances in them).

We also consider it necessary to supplement this list with the following negative factors, which are mostly insufficiently studied to date, but at the same time tend to create potential threats to the vital interests of a person and citizen, society and the state:

- hazards of mineral nanoparticles (the occurrence of micro- and nanoscale mineral particles in the process of man-made rock disturbance and an increase in the amount of ultrafine (floating) dust, which poses danger to human health in the mine air; removal of these particles into the atmosphere during the ventilation of mining enterprises, which creates additional environmental problems that have not yet been sufficiently studied);

- geopathogenic hazards (the presence of negative impact on human health and vital activity of geoelectric fields operating in the bioactive range in geopathogenic zones, geographically related to anomalies of the geological environment, including those arising as a result of man-made changes in the subsurface);

- microbiological hazards (the possibility of moving into the environment of fossil microorganisms (paleobacteria) that exist in the lithosphere, whose properties and impact on the human body are not fully studied) [9].

Being the result of natural geological forces or technological operations, the above-mentioned dangerous manifestations affect humans and the environment, and therefore require understanding, evaluation and development of regulatory measures to prevent and stop them.

The above mentioned issues allow us to define the concept of mining safety as follows: protection of vital interests of a person, society and the state from negative manifestations of geomorphological, lithospheric-ecological, geodynamic, gas-dynamic,



hydrodynamic, geopathogenic, microbiological and other factors during implementation of a complex of activities (processes) aimed at carrying out, fixing and maintaining mines and rocks extraction. It seems correct to fix this definition in the relevant paragraph of Article 1 of the Mining Law of Ukraine.

**Conclusions.** The conducted research enables us to declare that the definition of the concept of “safety” depends on the context of the normative legal act in which it is used, and is most often defined as security; the state of security; ensuring compliance with norms; a multitude or set of measures, and so on. Based on the current heritage of the science of mining and geological cycle regarding the typology of mountain range properties, scientific grouping of subsurface characteristics, as well as taking into account the features of hazards occurrence and manifestation in the process of mineral resources use, the following classification seems comprehensive for its further use in law-making: geomorphological, lithospheric-ecological, geodynamic, gas-dynamic, hydrodynamic, geopathogenic, microbiological hazards, as well as the dangers of mineral nanoparticles.

It is proposed to define the safety of mining operations as follows: the safety of mining operations is the protection of vital interests of a person, society and the state from negative manifestations of geomorphological, lithospheric and ecological, geodynamic, gas-dynamic, hydrodynamic, geopathogenic, microbiological and other factors when applying a set of activities (processes) aimed at carrying out, fixing and maintaining mines and extracting rocks. It is also recommended to fix this definition in the mining legislation.

#### References.

1. Malysheva, N. R. (2011). Environmental law: vectors of development in the XXI century. *Law of Ukraine*, 2, 114-123.
2. Legislation of Ukraine (n.d.). *The Law of Ukraine “On the national security of Ukraine”*. Revision on November 21, 2020. Retrieved from <https://zakon.rada.gov.ua/laws/show/2469-19>.
3. Legislation of Ukraine (n.d.). *The Law of Ukraine “On the basis of national security of Ukraine”*. Revision on November 21, 2021. Retrieved from <https://zakon.rada.gov.ua/laws/show/964-15>.
4. Legislation of Ukraine (n.d.). *“Mining law of Ukraine”*. Revision on November 21, 2020. Retrieved from <https://zakon.rada.gov.ua/laws/show/1127-14>.
5. Legislation of Ukraine (n.d.). *The Order of the Ministry of social policy of Ukraine “About the statement of Safety rules for the development of ore and nonmetallic mineral deposits by underground method”*. Revised on November 21, 2020. Retrieved from <https://zakon.rada.gov.ua/laws/show/z0129-17>.
6. Legislation of Ukraine (n.d.). *The Order of the State committee of Ukraine for industrial safety, labor protection and mining supervision “About the statement of Safety rules in coal mines”*. Revised on November 21, 2020. Retrieved from <https://zakon.rada.gov.ua/laws/show/z0398-10>.
7. Legislation of Ukraine (n.d.). *The Order of the State committee of Ukraine for industrial safety, labor protection and mining supervision “About the statement of Labor protection rules for the development of mineral deposits in an open-pit way”*. Revised on November 21, 2020. Retrieved from <https://zakon.rada.gov.ua/laws/show/z0356-10>.
8. Abbasi, S. (2018). Defining Safety Hazards & Risks in Mining Industry: A Case-Study in United States. *AJAST*, 2(2), VI-VII, 1071-1078.
9. Koziaikov I. N. (2011) Legal regulation of subsoil use safety. *State and law*, 9, 101-105.

### Нормативно-правовий зміст категорії «безпека гірничих робіт»

А. М. Благодарний<sup>1</sup>, І. М. Козьяков<sup>2</sup>,  
Л. М. Стрельбицька<sup>1</sup>, М. П. Стрельбицький<sup>1</sup>

1 – Національна академія Служби безпеки України, м. Київ, Україна, e-mail: [blagek2015@gmail.com](mailto:blagek2015@gmail.com)

2 – Київський національний економічний університет імені Вадима Гетьмана, м. Київ, Україна

**Мета.** На підставі аналізу наукової літератури та норм чинного законодавства дослідити основні елементи безпеки проведення гірничих робіт, а також сформулювати визначення поняття безпеки гірничих робіт для його використання в нормативно-правовому регулюванні відносин у цій галузі.

**Методика.** Результати отримані шляхом застосування комплексу методів: а) загальнофілософських (діалектичного, антропологічного); б) загальнонаукових (абстрагування, аналізу й синтезу, системного аналізу, класифікації); в) правових (історико-правового, порівняльно-правового, семантико-юридичного).

**Результати.** На основі аналізу основних категорій загальної теорії безпеки та їхнього застосування в законодавстві України досліджена етимологія правового терміну «безпека» й показано, що визначення даного поняття залежить від контексту нормативно-правового акту, в якому воно використовується. Цим зумовлюється потреба в удосконаленні поняттєвого апарату гірничого законодавства й розробці категорії «безпека гірничих робіт». Аргументовано, що уніфікація цієї юридичної категорії та уточнення її автентичної дефініції сприятиме досягненню єдності та узгодженості гірничого законодавства, належного правового регулювання суспільних відносин щодо забезпечення захищеності національних інтересів України у сфері надрокористування. Обґрунтована необхідність розширення передбаченого чинним законодавством переліку можливих небезпек, що виникають під час геологічного вивчення, використання та охорони надр. Сформульоване авторське визначення безпеки гірничих робіт, що пропонується закріпити у відповідному пункті статті 1 Гірничого закону України.

**Наукова новизна.** У результаті лексико-юридичного аналізу зроблено висновок, що дефініція поняття «безпека» в залежності від контексту нормативно-правового акту, в якому воно використовується, та особливостей предмету правового регулювання певних суспільних відносин визначається як: захищеність; стан захищеності; забезпечення (дотримання норм); комплекс заходів; сукупність неоднорідних засобів. З урахуванням геосферної характеристики надр, а також особливостей виникнення й розвитку небезпек у процесі користування надрами, запропонована класифікація проявів небезпек при проведенні гірничих робіт (геоморфологічні, літосферні, геодинамічні, газодинамічні, гідродинамічні, геопатогенні, мікробіологічні небезпеки, а також небезпеки мінеральних наночастинок). Обґрунтовано доповнення чинного законодавства (ч. 1 ст. 1 Гірничого закону України) таким визначенням безпеки гірничих робіт: захищеність життєво важливих інтересів людини, суспільства й держави від негативних проявів геоморфологічних, літосферно-екологічних, геодинамічних, газодинамічних, гідродинамічних, геопатогенних, мікробіологічних та інших факторів при здійсненні комплексу робіт (процесів) із проведення, кріплення й підтримання гірничих виробок і вилучення гірських порід.

**Практична значимість.** Практичне значення отриманих результатів полягає в тому, що вони можуть бути використані суб'єктами законодавчої ініціативи при вдосконаленні положень чинного законодавства України, а також практичними працівниками при організаційно-правовому забезпеченні проведення гірничих робіт.

**Ключові слова:** безпека, небезпеки надрокористування, безпека гірничих робіт, закон, норма-дефініція

*The manuscript was submitted 16.10.20.*