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## LEGAL REGULATION OF THE USE OF TECHNOGENIC WASTE OF A MINING ENTERPRISES IN UKRAINE

**Purpose.** Substantiation of improvement of normative-legal regulation of use of technogenic wastes of mining enterprises for maintenance of requirements of ecological safety of settlements of Ukraine and their conformity to the European standards of realization of economic activity.

**Methodology.** The application of methods of comparative legal research, system and structural-functional analysis, functional method allowed justifying the feasibility of optimizing the regulation of the use of man-made waste from mining enterprises.

**Findings.** The expediency of amending Art. 4 of the Law of Ukraine "On Waste", supplementing articles of the Mining Law of Ukraine with provisions that will provide for the competence of public authorities in the field of mining waste management, the procedure for handling all types of mining waste, duties and responsibilities of economic entities for violation of legislation in the field of managing mining waste, and others.

**Originality.** Proposals have been formulated to amend the Law of Ukraine "On Waste", articles of the Mining Law of Ukraine, aimed at consolidating the rights and responsibilities of the subjects of the administrative and legal regime of man-made waste of mining enterprises.

**Practical value.** The obtained results can be used to improve the mechanism of utilization and use of man-made waste from mining enterprises.

**Keywords:** *liability of economic entities, mining enterprise, mining legal relations, technogenic waste, utilization*

**Introduction.** Today's humanity, increasing the rate of its excessive activity in all spheres, ignores the interests and laws of the environment, which leads to an exhaustion of natural resources and depletion of soil.

A particular problem in Ukraine is the problem of waste, which is large-scale and significant because there has not been an efficient response to the demand for rational waste management for a long time. Thus, a significant scale of resource management, the use of outdated technological base and directing the national economy to the energy and resources sector of development has contributed to the growth of indicators of waste generation and storage.

The problem of waste can be classified as one of the major environmental problems, which has become the most important in the aspect of resources. But the waste generated by the extraction, beneficiation, chemical and metallurgical processing, transportation and storage of domestic minerals not only negatively affects the state of the environment, but can also be a secondary source of energy for the industry, construction and energy production.

Due to the high rate of waste production and low rates of recycling, significant amounts of solid waste products have been accumulated in Ukraine for a long time. Only a small part of them is used as secondary material resources, while the rest goes to landfills.

The territory of Ukraine belongs to one of the regions of the world that is most affected by mineral resources. Within Ukraine there are about 20 thousand mineral resources and there are 117 species of minerals that are concentrated in the territory of our country. There are about 8290 industrial enterprises and 1110 objects of the account of 98 kinds of mineral raw materials which are registered in the State balance of stocks of mineral resources of Ukraine [1]. Ukraine has significant volumes of reserves of coal minerals, metallic, zinc-iron, titanium-zirconium and manganese ores as well as non-metallic mineral resources. The increase in production volumes of soft coal is accompanied by a steady decline in their

quality due to the deterioration of the conditions of mining and exploitation of natural resources.

Mining and processing activities have resulted in the accumulation of billions of cubic metres of waste on the planet's surface in the form of open cast mines, sludge, slag, ash and so on. Over 2 billion tonnes of mining waste is produced annually, 60–70 % of which is deposited in waste stockpiles and dumps [2].

The National Strategy for Waste Management in Ukraine until 2030, approved by the Order of the Cabinet of Ministers of Ukraine No. 820-r of October 8, 2017. It is stated that the waste management system in Ukraine is characterized by such negative trends as:

1. Increased accumulation of industrial and domestic waste, which affects human health and deteriorates the environment; removal and utilization of hazardous waste with inefficient technology and in an inappropriate manner.
2. Lack of consideration of hazardous consequences of waste disposal.
3. Low level of involvement in waste recycling.
4. Lack of implementation of effective economic instruments for more active waste use.

**Literature review.** The issues of legal regulation of activities of mining and extractive industries associated with waste are in between many fields of scientific research. Among the scientists who have studied the legal characteristics of waste management in the mining and extractive industries, we can name R. S. Kirin, I. M. Koziakov [3] and others. Research on the implementation of state environmental policy, including the use of technogenic resources, was carried out in the scientific works by O. V. Gladyy [4, 5], Yu. O. Legeza [5, 6], G. V. Ilyushchenko [7]. However, the normative and legal regulation of the use of industrial waste from mining enterprises has not been comprehensively studied, despite their crucial importance for solving the problem of environmental safety in Ukraine.

**The purpose** of the article is to conduct legal analysis of the problematic of legal regulation of technogenic waste utilization by the mining enterprises, and to look for ways to improve

it in order to achieve the goals of implementation of European standards of environmental protection of the production.

The research methodology is based on the use of a complex set of general scientific and special scientific methods of examination of legal facts, objects and phenomena. Application of the dialectic method of scientific knowledge enabled us to analyse the current and future national legislation of Ukraine that regulates the regime of technogenic waste utilization by the mining and water producing enterprises. Using the method of structural and functional analysis and systematization allowed establishing the features of the procedure for obtaining special permits for the use of industrial waste from mining enterprises. The functional method allowed identifying the features of legal regulation of the subjects of the regime of conduct with technogenic mining waste.

**The main part.** The worsening ecological crisis in Ukraine is provoked by the accumulation of significant volumes of waste due to the lack of effective technologies and measures which could prevent their rapid accumulation, as well as their utilization, disposal and recycling. All of this is the main reason for the development of the national economy. Consequently, effective systems need to be put in place to prevent waste generation, recycling and utilization that will function at the national level. This should be a strategic objective of state policy aimed at creating an energy- and resource-independent country, in particular for the economy of mineral resources in the world as a whole.

Industrial wastes such as waste and dissolved rock, ash and slag, sludge, mule, flotation and gravitation tailings, metallurgical slags are produced during extraction, enrichment, recycling and storage of solid minerals. The amount of its solid phase in Ukraine reaches 0.6 billion cubic metres. A total of 8.6 billion cubic metres of solid industrial waste has accumulated on 50 thousand hectares of land surface. Of these, only 0.12 billion cubic metres are used for the production of construction materials and mineral additives, while the rest is left on landfills and dumps [8].

Thus, in order to prevent the negative process of degradation of waste caused by uncontrolled accumulation and storage of waste, Ukraine has established the legal framework regulating the management of waste. However, there is still no unified legal framework for waste management. Accordingly, today it is important to create the right conditions to ensure the mechanism of legal regulation of waste generation, recycling and utilization, the possibility of using innovative approaches to the integrated solution of problems associated with waste.

Article 5 of the Code of Ukraine on Subsoil (hereinafter referred to as the CUoS) stipulates that technogenic deposits of soft diggings are places with accumulated wastes of extraction, enrichment and processing of mineral raw materials with estimated reserves of industrial value. This article also states that "all genera of bark spoil, including technogenic ones, with reserves assessed as industrial, constitute the State Fund of deposits of Mineral Resources" [9, Art. 5].

Records of state deposits and stock of crushed stone, including those of man-caused and natural origin, are kept according to the Order of the Cabinet of Ministers of Ukraine of December 31, 1995 No. 75 "On approval of the Procedure of state registration of deposits, stocks and manifestations of minerals" [10]. It is the duty of the State Service for Geology and Mineral Resources of Ukraine to maintain the inventory of resources, reserves and manifestations of minerals. Every year it prepares an analytical report on the state of mineral-syrup base of Ukraine, the prospects of its formation and development. Today in the State Fund of deposits of crude diggings, there are only 13 technogenic deposits registered. But the actual amount of accumulated waste significantly exceeds the data contained in the state statistics, since during statistical observations the revenues of bankrupt and nonperforming enterprises are not taken into account. However, they are significant in terms of volume.

Taking into account the norms of Article 23 of the Law of Ukraine "On the protection of the natural environment" of June 25, 1991, it is necessary to mention that the expenses of the bankrupt and non-operating enterprises are not included in the total volume. It should be noted that access to the State Cadastre of Natural Resources, which includes geospatial data, metadata and services, and other activities on them are carried out on the Internet in accordance with the Law of Ukraine "On National Infrastructure of Geospatial Data" of June 13, 2020 [11]. According to this, the scientific and production establishment of the State Geological Survey of Ukraine (SRDE "Geoinform Ukraine") together with the Geological Survey of Norway within the joint project EIMIDA – European Integration of Mineral Resources Data, created an interactive map of technogenic objects, including waste dumps, terrickons, sludge reservoirs and other objects (metallurgical slags, ashes, sludge deposits, mine rocks, rock formations, and so on) [12].

Within the territories of Ukraine's nine regions, including Volyn, Dnipropetrovsk, Donetsk, Luhansk, and Lviv regions, there are a significant number of technogenic objects (waste, rock formations, exposed rocks, ash and slag waste, iron and steel slags, rock particles, and others), the largest part of which is waste (3,059,479 thousand m<sup>3</sup>) and mining waste (1,523,170 thousand m<sup>3</sup>). This concentration of industrial objects on the ground has led to the exclusion of more than 51,000 hectares from the land use [13].

The mining industry is one of the largest industrial sources of pollution of the biosphere. Mining activities lead to a sharp deterioration of the ecological situation on the lands of the mining allotment and the adjacent territories. Mass explosions in quarries occur regularly and are major sources of dust and toxic gases. The location of quarries, dumps, sludge and tailings ponds near settlements leads to dust and poisoning of the environment by combustion products. At the same time, of the world's large production of tens of billions of tons of mineral resources, only up to ten percent is used directly in production. The rest of the extracted raw materials are wastes from mining and processing industries. These wastes contain consists of unconditional waste rock dumps, waste rock, mining and processing waste, and waste from metal processing.

It should be noted that natural dumps are a rather complicated set that creates many problems for the environment, including: weathering and leaching of rock with scattering around the neighbourhood, spontaneous combustion with greenhouse gas emissions and more. Mining enterprises are constantly violate the regulations governing the storage of rock and the formation of existing rock dumps, which may result in spontaneous combustion of other rock dumps. The controlling bodies reveal the facts of formation of technological rock in dumps in the absence of the project of performance of these works and the passport of places of rock storage. Measures to drain wastewater from rock dumps are also not implemented.

According to Art. 4 of the Law of Ukraine "On Waste" of March 5, 1998, it regulates relations related to the formation, collection and procurement, transportation, storage, treatment (processing), utilization, disposal, decontamination and disposal of waste generated in Ukraine, are transported through its territory, exported from it, as well as with the transportation, treatment and utilization of wastes imported into Ukraine as secondary raw materials [14, Art. 4]. At the same time, part 3 of Art. 4 of the Law of Ukraine "On Waste" further establishes that the peculiarities of the regulation of relations regarding the treatment of non-tradable gaseous substances released directly into the air, substances discharged with wastewater into water bodies (except those that accumulate and are subject to export to specially designated storage sites), radioactive waste and substances contaminated with them, overburden rocks of mining enterprises, which are used for backfilling technology to seal the produced space, scrap metal, including by-products from the production and pro-

cessing of ferrous and nonferrous metals and their alloys (slags, sludges and other), as well as secondary material or energy resources and other waste are determined by the relevant laws. However, today there is no special legislation on waste from the mining industry.

The bill "On Waste Management" of November 1, 2020 (hereinafter called the bill), which has already been considered by the Parliament of Ukraine in its first reading, does not solve this problem. In fact, Article 2 of this draft law stipulates that it shall not cover, for instance: uncontaminated gaseous substances that are released directly into the air; radioactive waste; waste from extractive industries resulting from mining operations, extraction, processing and storage of waste rock and the development of waste rock deposits which are regulated by law [15, Art. 2].

The content of the bill demonstrates the need to adopt a significant number of laws on specific types of waste and activities with them: waste from the extractive industry (part 2 of Art. 2), expanded liability systems for producers of products (part 1 of Article 10), economic instruments to prevent waste generation, ensure their recycling and other renewal (part 2 of Art. 57), and so on. However, from the point of view of ensuring systematic legislative regulation of relevant public relations, it is legally more appropriate to solve general waste management issues within the framework of a single waste legislation act, and in special laws to determine the details of such activities with specific types of waste, if necessary.

It should also be noted that the proposed title of the bill ("On Waste Management") is narrower than its content and does not take into account the fact that waste management is only one aspect of the legal regulation of relevant public relations. This is explained, in particular, by the fact that in accordance with the definition of this term in part 1 of Art. 1 of the bill, such management means "collection, transportation, recovery (including sorting) and disposal of waste, including supervision of such operations and further care of waste disposal facilities". However, in addition to these issues, the bill regulates others. In this regard, in our opinion, the name "On Waste" will be a better name, as it allows one to more accurately reflect all public relations related to waste than the name "On Waste Management".

Furthermore, it should be noted that the term "management" in the draft law is used not only as a definition of certain waste management activities, but also as a characteristic of organizational and procedural activity of the bodies of legislative power and local self-government, which makes it difficult to understand and does not comply with the principle of legal definiteness. For example, the administrative activity of the Cabinet of Ministers of Ukraine it means "general management in the field of waste management" (part 1 of Article 19 of the bill), in the field of the management of the central body of executive power, which ensures the formation and implementation of the state policy in the field of environmental protection it means "ensuring the formation of the state policy in the field of waste management" (part 1 of Article 20 of the draft law), in the field of the management activities of the governing bodies of rural, village, city councils and councils of united territorial communities it means "organization of management of household waste, construction waste and demolition waste" (part 2 of Article 26 of the draft law). With this in mind, the term "waste management" in the draft law should be replaced with "waste handling" (also taking into account that this term is used in the current Law of Ukraine "On Waste"), leaving the use of the term "management" for the relevant activities of the state authorities and local self-government bodies.

Moreover, the current Law of Ukraine "On Waste" considers waste management to be "activities aimed at preventing waste creation, collection, transportation, sorting, storage, treatment, reprocessing, recycling, utilization, decontamination, waste disposal and burial, including control of these operations and monitoring of disposal sites" [14, Art. 1]. More-

over, the use of the term "waste management" in the title of the general law in this sphere of public relations is not fully in line with the legislation of the European Union, which is addressed by European Parliament and EU Council Directive No. 2008/98/EC where "waste management" or "waste handling" is considered as part of the general legal regulation of public relations in relation to waste.

The regulatory framework of Ukraine in the field of waste management regulates a fairly wide range of relations between business entities and public authorities and, in particular, the control and supervision of compliance with the law by the first ones. However, even among domestic scientists there is no unanimity on the definition of the essence of the concepts "industrial waste", "production waste", and so on. There is also no clear definition of "industrial waste" in national legislation. Of course, this complicates their understanding, clear demarcation and leads to differences in the correct application and compliance with waste legislation.

Today the basic document in Ukraine for information support and waste management is the State Waste Classifier approved by the Order of the State Committee of Ukraine for Standardization, Metrology and Certification of February 29, 1996, No. 89 [16]. It establishes the classification of wastes on the basis of the accounting system in compliance with international normative documents, standards in the field of environmental protection, resource conservation and recycling of raw materials. In general, waste is divided into two main groups: waste from production (industrial waste) and waste from consumption. Waste production includes materials, goods, products, which were created in the process of manufacturing products, performing work or providing services and are not used at the enterprise (organization), or those that are wholly or partly lost their serviceability. They account for close to 90 % of the total amount of waste accumulated in Ukraine.

In the scientific community there are thoughts about the need to reform the approach to determining the status of industrial waste and, accordingly, the approaches to administrative and legal regulation of their management. Thus, O. V. Gladiy proposes replacing the legal regime of mining wastes from the waste of technogenic genera of crushed diggings into technogenic mineral in addition to tax allowances and reductions in prices for using their facilities as well as their wide implementation [4]. In our opinion, it would be advisable to introduce the notion of "industrial waste" into the legislation, which would facilitate their separation from other types of waste, and would ensure more effective implementation of the legislation in this area. Formulating the concept of "industrial waste" should be based on the general concept of "waste" contained in the Law of Ukraine "On Waste", taking into account the specificity of this particular type of waste.

There are different classifications of solid industrial waste:

- by industry (waste from the oil industry, metallurgy, chemical and other industries);
- by specific enterprises;
- by aggregate state (solid, rare, gas-intensive);
- by the combustion (combustible and non-combustible);
- by processing methods;
- by the level of safety (divided into four classes: I – extremely hazardous; II – highly hazardous; III – moderately hazardous; IV – low risk). Article 34 of the Law of Ukraine "On Waste" defines the requirements for the management of hazardous waste, according to which all hazardous wastes are divided into four classes and are subject to accounting in terms of their adverse impact on the natural environment and human health. A business entity that owns or operates at least one hazardous waste management facility has certain responsibilities, including the obligation to prevent pollution of natural environment and in case of its occurrence to eliminate the pollution and its consequences; to take measures aimed at prevention of accidents, elimination of their consequences and protection of people and natural environment from their im-

fact; to have a license for operations in the field of hazardous waste management [14, Art. 34].

Disposal of hazardous wastes is allowed only in properly equipped areas and is carried out in accordance with the license conditions for the management of hazardous wastes. Subjects of the economic activity, in whose territory hazardous wastes are stored, are in accordance with the law in the objects of increased risk. Mandatory insurance is also subject to liability of the management entity, which owns (operates) the object of involvement in hazardous waste, for damage caused by accidents at such facilities to the lives, health, property of individuals and legal entities. Thus, waste legislation gives a special status to hazardous waste and imposes special duties on the business entities associated with an increased level of attention of the state to the order of management of such waste. Currently, there is no clear answer at the legislative level as to whether all mining waste is harmless or not.

It should be noted that the resolution of the Cabinet of Ministers of Ukraine "On Identification and Declaration of Safety of High Risk Objects" No. 956 of July 11, 2002 [17] to implement the Law of Ukraine "About the objects of high risk" established norms of the mass thresholds of hazardous substances, which allow a given object to be included in the list of unhazardous ones. Considering the fact that waste is always defined as substance, we can conclude that the given decree of the Cabinet of Ministers of Ukraine can serve as a criterion for determining the status of mine waste – whether it is hazardous or safe. At the same time, in the absence of a special law referred to in Art. 4 of the Law of Ukraine "On Waste", and in conditions of systematic analysis of the state of legal regulation of waste management in the mining industry it should be noted that now the classification of waste, its division into certain groups and classes is based on the State Classifier of Waste.

Today, the mining and waste management companies, as well as other entities of waste-related legal relations, have to comply with Articles 16 and 17 of the Law of Ukraine "On Waste", which contain an exhaustive list of rights and a non-exhaustive list of duties of entities related to waste. For example, such entities are obliged to: prevent waste production and reduce the waste production volume; keep an initial count of the quantity, type and composition of waste produced, transported, stored, treated, disposed of and to submit statistical reports in accordance with the procedure established by law.

In addition, economic entities are required to have a permit to carry out waste management operations if their activities result in generation of waste for which the indicator of total waste generation exceeds the level of 1000. If the business activities of economic entities result exclusively in waste production, for which the indicator of total waste production is between 50 and 1000, these entities must jointly submit waste declarations according to the procedure established by the Cabinet of Ministers of Ukraine.

Moreover, Article 33 of the Law of Ukraine "On waste disposal" also establishes certain requirements for mining enterprises and other entities that store waste. For example, waste storage and disposal shall be carried out in accordance with the requirements of environmental safety and in a manner that ensures maximum utilization of the waste or its transfer to other consumers. For each site or object of storage or disposal of waste a special passport is produced, where the name and code of the waste are noted as well as its quantitative and qualitative composition, location as well as technical characteristics of the storage or disposal site and details of the control methods for safe operation of the locations or facilities.

Waste storage and disposal shall be carried out at the locations designated by local authorities taking into account the requirements of land and environmental legislation, in the presence of a permit for operations in the field of waste management, which specifies types and quantities of waste, general technical requirements, safety measures, information on the establishment, designation, methods of waste treatment in ac-

cordance with the established conditions of their storage [14, Art. 33]. The places or objects defined for waste storage shall be used only for the waste applied for the permit.

Unauthorized dumping and placement of waste are forbidden in the underground horizons, in the territory of cities and other settlements, in the territories of the natural reserve fund, on land conservation, health, recreational and historical and cultural purposes, recreational and historical and cultural purpose, in areas of water protection zones and zones of sanitary protection of water objects, in other places, which can cause a threat to the natural environment and human health. Disposal of wastes in the waste dumps is allowed only in exceptional cases after special investigations and in compliance with the rules and regulations stipulated by the legislation.

It is worth noting that to some extent the order of management of mining waste is specified in the regulatory and technical documentation. For example, the Statute on internal waste disposal and waste composition in ore mining and flux-carrying enterprises, approved by the Order of the Ministry of Industry and Trade of Ukraine No. 412 of August 17, 2004, is a legal support of one of the ways to carry out mining and technical reclamation of certain plots of deep quarries.

Certain issues of waste management in the mining industry are also regulated by the Code of Ukraine on Subsoil. In particular, paragraph 10 of Art. 8 of the CUoS states that the competence of the Cabinet of Ministers of Ukraine in the field of geological study, the use and protection of mineral resources, including the decision on the use of surface resources for the storage and disposal of waste products and other hazardous substances, is related to this. In accordance with Article 22 of the CUoS, the disposal of industrial waste and other hazardous substances and waste water discharge is allowed in exceptional cases, if the rules, regulations and requirements stipulated by the Ukrainian legislation are strictly adhered to. Water for the above purposes is provided in accordance with Art. 19 of the CUoS according to the results of special investigations and on the basis of designs, made at the request of interested enterprises, institutions and organizations [9, Art. 19].

**Conclusions.** On the basis of the above, we should consider that the problem of waste management in the mining industry must be solved first of all, by introducing an effective legislative regulation of waste management, which should be based on the study on national peculiarities in the solution of this problem and the positive experience of European legislation. In view of the provisions of Art. 4 of the Law of Ukraine "On Waste", it is advisable to supplement the Mining Law of Ukraine with provisions that would provide for the competence of the state authorities in the field of waste management in the mining and mineral industry. The procedure for the management of all types of waste from the mining and mineral processing enterprises, the responsibilities and liability of entities for violation of the law in the field of management of waste from the mining and mineral processing industry, and so on.

The introduction of such changes in the mining legislation of Ukraine will not contradict the provisions of Art. 4 of the Law of Ukraine "On Waste" and, conversely, will promote the creation of a transparent and understandable system of waste management of the mining industry, and can develop and implement mechanisms to reduce hazardous impacts on the environment and human health.

Given the analysis of long-term legislation of Ukraine in the studied area of relations, it is considered appropriate in the legislative terminology on waste in competition between the terms "waste management" and "handling wastes" to prefer the term "waste management", by which we propose to understand actions aimed at prevention of waste generation, collection, transportation, storage, recovery (including sorting, recycling) and disposal (utilization, decontamination) of waste, including control over such operations and further supervision

of waste disposal sites. We consider it expedient to enshrine this clarifying definition of the concept of “handling wastes” in the current Law on Waste, while keeping the use of the term “waste management” to the relevant activities of public authorities and local governments.

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## Правове регулювання використання техногенних відходів гірничодобувних підприємств в Україні

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**Мета.** Обґрунтування вдосконалення нормативно-правового регулювання використання техногенних відходів гірничодобувних підприємств задля забезпечення вимог екологічної безпеки населених пунктів України та їх відповідності європейським стандартам здійснення господарської діяльності.

**Методика.** Застосування методів порівняльного правового дослідження, системного та структурно-функціонального аналізу, функціонального методу дозволило обґрунтувати доцільність оптимізації регулювання режиму використання техногенних відходів гірничодобувних підприємств.

**Результати.** Обґрунтована доцільність внесення змін до ст. 4 Закону України «Про відходи», доповнення статей Гірничого закону України положеннями, що передбачатимуть компетенцію органів державної влади у сфері поводження з відходами гірничодобувної промисловості, порядок поводження зі всіма видами відходів гірничодобувних і гірничопереробних підприємств, обов'язки й відповідальність суб'єктів господарювання за порушення законодавства у сфері поводження з відходами гірничодобувної промисловості тощо.

**Наукова новизна.** Сформульовані пропозиції щодо внесення змін до Закону України «Про відходи», статей Гірничого закону України, спрямованих на закріплення прав та обов'язків суб'єктів адміністративно-правового режиму техногенних відходів гірничодобувних підприємств.

**Практична значимість.** Отримані результати можуть бути використані для вдосконалення механізму утилізації та використання техногенних відходів гірничодобувних підприємств.

**Ключові слова:** відповідальність суб'єктів господарювання, гірничодобувне підприємство, гірничі правовідносини, техногенні відходи, утилізація

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