5 СУДОВА ІНЖЕНЕРНО-ЕКОЛОГІЧНА ЕКСПЕРТИЗА

DOI: https://doi.org/10.33994/kndise.2022.67.54
УДК 349.6:340.6

Olga Semyonovna Kataraga
Doctor of Law,
Director, forensic expert of the highest category

E-mail: olga.cataraga@justice.gov.md

Viorica Ivanovna Trifăuţan
Doctor in biological sciences,
Head of the Laboratory of Judicial Expertise
of Materials and Substances, Forensic expert

E-mail: viorica.trifautan@gmail.con

Ana-Maria Vasilevna Cîşleanu
Laboratory of Judicial Expertise of Materials and Substances,
Forensic trainee expert

E-mail: anamariacisleanu@yahoo.com

National Center of Judicial Expertise of the Ministry of Justice
of the Republic of Moldova

THE ROLE OF ECOLOGICAL FORENSIC EXPERTISE IN ENVIRONMENTAL COLLABORATION ACTIVITIES IN THE FIELD OF THE ENVIRONMENT

The ecological imbalance in the modern world has reached such proportions that the balance between the natural systems necessary for life and the industrial,

technological and demographic needs of mankind has been disturbed. Pollution has a major impact on human health, triggering and inducing many diseases that also lead to mortality, especially in developing countries. Therefore, pollution control is vital and should be at the top of the government's list of priorities.

This article analyzes the most important environmental pollutants and effective cooperation in solving environmental problems

Key words: *ecological judicial expertise, environmental factors, pollutants, anthropogenic factors, population health, international cooperation.*

Formulation of the problem. In the last decades, the anthropogenic factors of environmental pollution have started to go beyond the established norms, acquiring a global character. Harmful emissions of harmful substances, and diversions of wastewater, not only destroy living nature, and negatively affect human health, but they can alter the very properties of environmental factors, which can lead to adverse ecological and climatic consequences.

Environmental pollution has become one of the most debated issues of today and a major issue for the management of society. Man and the environment are inseparable entities, human existence is dependent on the environment, and environmental factors (air, water, soil) can change, following their use by humans. Thus, pollution appears, as an implicit aspect of life, in the development of which some products, resulting from physiological processes and from the activity of man and animals, become residues that can disturb good living depending on their nature and quantity. Removing pollution is a problem of correcting the errors that cause it.

Throughout the economic and social development of the country, it is necessary to create with priority the conditions and strict observance of the norms that will ensure, on the one hand, a healthy, unpolluted environment for living, and on the other hand, an appropriate environment to ensure success. economic benefits for human life and the preservation of vegetation and living things.

Human activity, to a large extent, affects the ecological balance through pollution in various ways and also harms life, health, tranquility, or comfort on earth.

Pollution is an activity of influencing and change of the environment to the detriment of the natural ecological balance. It can occur in case of leakage, disposal, improper storage of harmful chemicals, radioactive waste, industrial or household waste, exhaust fumes, etc. The polluted environment negatively affects not only human life and health, but also the marketability of agricultural products and the food industry of one's own country and neighboring countries.

The purpose of the study. The place of these crimes is always related to the source of pollution, illegal deforestation of trees, shrubs, destruction or damage of forest masses, etc. The establishment of the crime scene can be cross-border in nature and offers the possibility for operative identification and immediate cessation of environmental pollution or illegal deforestation. The main purpose of the study is to give an analysis of all possible crimes as well as the role of ecological forensic expertise.

Presentation of the main material. Contaminants or toxic substances present in the food of a modern person who is under the threatening influence of the environment can cause severe food intoxication and worsen the quality of life. This problem becomes more acute with the appearance on the food market of more and more imported food products, but above all with the deteriorating environmental situation. Ecologically clean food is what every person and society as whole dreams of.

Unfortunately, food can often be a carrier of xenobiotics, or foreign substances that enter the body with food and have a high degree of toxicity, such as radionuclides, pesticides, nitrates, nitrites, mycotoxins – chemicals produced by some molds (fungi), biological pollutants. Poor quality food, malnutrition, and overeating are factors in the development of such diseases as cardiovascular, oncological, diabetes, diseases of the gastrointestinal tract, liver, kidneys, and many others.

Water is a precious consumer good. To protect our natural water and help produce drinking water, all wastewater must first be cleaned of contaminants and pollutants before being returned to the water system [5].

Wastewater comes from domestic, industrial, rainfall, or various industrial processes that take place in factories and plants, etc. Household water is the result of people's daily activities, averaging 150 liters per person per day (in the UK) to 950 liters (in some parts of the US). The issue of wastewater has become increasingly important as a result of widespread concern around the world about the pollution of the environment in which we live.

The largest volume of wastewater to be treated is in municipal wastewater treatment plants, so much more diverse combinations and more efficient procedures are needed here. The procedures used depend on the type of wastewater treatment plant.

The main source of drinking water in the Republic of Moldova is surface water which supplies water to most of the population. Among the surface water sources, the most important source is the Dniester River, which supplies about 83 % of the water used; the Prut River covers 1.8 %, while groundwater sources provide about 15 % of the water. In 2010, the volume of water captured from surface sources was 721 million cubic meters.

The share of the rural population in the total population of the Republic of Moldova is high (more than 50 %); This population lives in about 1450 rural communities throughout the country, and in many of them the main sources of water are shallow wells, without centralized water supply and sewerage systems. Although the Republic of Moldova has water reserves, the water management system is still weak and unbalanced. According to the National Bureau of Statistics, there are large water leaks in distribution networks, urban settlements, and irrigation systems. Currently, there are about 500 m3 per year of drinking water available per capita in the country, or even less, which puts the Republic of Moldova in the category of countries with an “insufficient amount of water” [10].

According to the legislation in force, wastewater must be treated in treatment plants, so that the resulting effluent can be returned to nature.

On the other hand, sludge, which is the irreducible end product of sewage treatment plants, has potential value in construction, biogas production, and as a soil amendment for beneficial use in agriculture.

Under pressure from declining global clean water supplies and the need to feed a growing population, global use of wastewater and treated water is expected to increase rapidly to irrigate agricultural land and other purposes.

All human water needs are met by drinking water reserves, including rivers, lakes, and groundwater, the total volume of which represents 0.3 % of the volume of the hydrosphere. With the accelerated rate with which we consume water, respectively we subject it to change by introducing various liquid, solid or gaseous substances into water, air, and soil, which has a very high harmful potential. Adverse effects can have a significant impact on the environment directly, such as by destroying an ecosystem through the release of toxic substances into a lake.

The most pressing problem in the wastewater treatment process, which substantially influences the environment, is the lack of modern treatment plants, as well as high-performance sludge processing facilities.

Wastewater, when discharged into the pool, must not violate the self-purifying capacity of the aquatic environment. This means the lack or weak action of such parameters as temperature, transparency, pH, the content of suspended particles and metal ions with variable valence (catalysts of redox processes), nature of ligands, the content of photosensitizers, initiators, and inhibitors of radical processes. Wastewater must not be toxic to aquatic life. This means that discharged water must meet certain eco-toxicological and hygienic-sanitary requirements [6].

Wastewater treatment plants are obsolete and for this the reason wastewater is treated by inefficient methods, the consumer being the victim of inefficient management of water quality managers.

Analyzing the wastewater treatment methods as well as the pollution sources, the wastewater treatment plants insufficiently treat the wastewater, the cause being the large volumes of wastewater received and the excessive concentration of harmful substances, which disrupts the optimal operation of the technological process of wastewater treatment.

The samples of the discharged waters taken within the ecological judicial expertise show exceeding the maximum admissible concentrations, the waters of the Dniester, Prut, Bâc rivers being regularly affected. A source of river pollution is sewage treatment plants in an advanced state of wear, which causes numerous network damage, and as a result, wastewater is discharged directly into rivers. Untreated chemicals with excess chemical content being dumped into rivers have a negative impact on the self-purification process.

In the modern world, the problem of pollution of natural waters is becoming more and more urgent. Heavy metals and their salts are widespread industrial pollutants. According to the classification of N. Reimers, metals with a density of more than 8 g/cm3 should be considered heavy. Thus, heavy metals include Pb, Cu, Zn, Ni, Cd, Co, Sb, Sn, Bi, Hg. The industries that pollute the environment with heavy metals include ferrous and non-ferrous metallurgy, the

extraction of solid and liquid fuels, mining and processing complexes, glass, ceramics, electrical production, etc. [9, 11].

They enter water bodies from natural sources (rocks, surface layers of soil, and groundwater), with wastewater from many industrial enterprises and atmospheric precipitation, which are polluted by smoke emissions. Also, an increase in the concentration of toxic metals in surface waters can occur as a result of acid rain, leading to the dissolution of minerals and rocks washed by these lakes [8].

Natural sources of lead entry into surface waters are the processes of dissolution of endogenous and exogenous, cerussite minerals. A significant increase in the content of lead in the environment (including in surface waters) is associated with the combustion of coal, the use of tetraethyl lead as an antiknock agent in motor fuel, with the removal into water bodies with wastewater from ore processing plants, some metallurgical plants, chemical industries, mines.

Considering the danger of the influence of heavy metals on the human body, it is necessary to take effective measures:

– carrying out environmental monitoring of the content of heavy metals in water;

– installation at the enterprises of heavy, chemical, textile, and other industries of clearing systems;

– control at various levels of heavy metals in water;

– use of effective methods for detecting heavy metals in wastewater and cleaning methods.

High concentrations of heavy metals have a negative impact not only on the environment but also on human health. In connection with the intensive growth and development of industry, transport, and chemicalization of agriculture in recent years, the amount of heavy metals of anthropogenic origin has significantly increased.

Human impact on the environment is global. The anthropogenic factor becomes the leading one, and without taking it into account it is impossible to understand and evaluate what else will happen to our common home. The level of human impact on the environment also determines how the changing nature affects the further development of our society.

Atmospheric pollution affects global warming and climate change on the planet. The main “participants in the process” are heating plants and thermal power plants, enterprises of non-ferrous and ferrous metallurgy, chemical production, automobile exhausts, extraction and processing of coal and oil.

The destruction of forests affects the state of the atmosphere and disrupts the water regime of our planet. The rivers that are in the clearing zone are becoming shallow, their bottom is silting up, and this leads to the destruction of spawning places and a decrease in the number of various fish species. Groundwater reserves are significantly reduced, and, consequently, the soil dries up, which is freely washed away by rain streams and blown away by winds that are no longer restrained by forests.

The UN document notes that several record-breaking disasters and catastrophes occurred during the period 2020-2021, including the COVID-19

pandemic, frosts that caused massive damage to the US state of Texas, wildfires that destroyed almost 5 million acres of the Amazon rainforest, as well as 9 severe storms in Vietnam – in just 7 weeks.

In 2020, the Arctic experienced unusually high air temperatures and the lowest ice cover on record.

In Moldova, as well as throughout the world, there is an increase in the number of dangerous natural phenomena, which lead to an increase in material losses, and in many cases, human casualties. It is known that 90 % of all-natural disasters are related to weather, climate, and water. The statistics of recent decades show that the total number of natural disasters, including hydrometeorological ones, tends to increase, both in intensity and frequency [3].

In some years, the consequences of adverse hydrometeorological phenomena acquire the scale of a real socio-economic and environmental disaster, and the total damage from them can be comparable to the country's annual budget. Situations repeatedly arise when weather factors and the state of environmental pollution pose a direct threat to the life and health of the population, destabilizing the production activities of large enterprises and entire sectors of the country's economy.

Prevention of consequences of natural disasters, solution of the problem related to ecology and human activity:

1. Use the case for disaster risk reduction and climate change adaptation to advocate for better environmental management.

2. Increase the resilience of rural areas to drought.

3. Include disaster risk reduction as a key component of urban development, with particular attention to spatial planning, construction, water supply, and sanitation.

4. Assess and, if necessary, reconstruct the water supply and sewerage infrastructure.

5. Focus investments on the fastest possible transmission of early warning information.

Changes in extreme weather and climate events are the main indicator that allows most people to experience the impact of climate change firsthand. Human-induced global warming has already increased the number and intensity of some extreme events. Given the fact that climate change is advancing and the science of causation is advancing, people will continue to ask questions and the media will continue to report on how we affect extreme weather and how extreme weather affects us.

Due to the increase in the scale of anthropogenic impact (human economic activity), especially in the last century, the balance in the biosphere is disturbed, which can lead to irreversible processes and raise the question of the possibility of life on the planet. This is due to the development of industry, energy, transport, agriculture, and other human activities without taking into account the possibilities of the Earth's biosphere. Serious environmental problems have already arisen before humanity, requiring immediate solutions.

The results of the ecological forensic examinations show that the worst situation is attested in the localities of the republic regarding the water sources [1].

The issue of combating pollution and water supply must be considered as a component of the sustainable development policy of our country and our neighbors, which can not be addressed separately from the process of reforming society, economic, social, and political issues.

Actions and measures that can be taken to ensure the availability of water resources in the Republic of Moldova and neighboring countries, taking into account current and future climate change and the circumstances that may arise:

– Creating new structures for water management (for example: avoiding new dams, dams; building reservoirs (ponds, basins, etc.));

– Designing and implementing solutions for rainwater collection and use;

– Promoting technologies with low water consumption;

– Using re-circulated water for certain activities;

– Reduction of pollution sources;

– Setting goals for water quality and improving wastewater treatment;

Assessment of water requirements for the main categories of consumption (drinking water, industrial water, domestic water, etc.) in the context of climate change, etc. [7].

Water is extremely important for physiological, biochemical, hygienic and household processes, so we can say that it is the environmental factor with the greatest impact on health [12]. Ensuring the population with guaranteed quality water in sufficient quantities is one of the state's priority actions in the field of health. In order to provide the population with safe, quality water, well-coordinated multisectoral interventions and the political will of national decision-makers are needed. The goal of a high-quality water supply can only be achieved by holding all citizens of the Republic of Moldova accountable. The results for this purpose will be observed only to the extent that they are involved in the activities of protection and reduction of water pollution resources [4].

Throughout the history of mankind, environmental problems have steadily followed the development of scientific and technological progress. Photochemical smog has become one of the serious problems for man and nature, which can now be safely called humanity's payment for technological progress.

Smog is a consequence of the release of chemical waste into the atmosphere, and today is one of the main environmental problems for modern large cities, in which a significant number of various vehicles are concentrated. The problem of photochemical smog exists in many large cities where sunny weather prevails, for example, Los Angeles, Tokyo, Athens, Mexico City, and Paris.

Due to the high content of harmful substances, it is a serious danger not only to human health (problems with the heart, lungs, anemia) but also to nature, buildings, and wildlife.

It can be said with certainty that photochemical smog carries a great danger to the entire biosphere. In the modern world, one of the most important tasks in solving the environmental issue is the fight against smog.

Solving the problem of photochemical smog requires not only time but also resources, both human and financial. However, despite the complexity, it can be said that this is an urgent environmental problem of our time, which cannot be ignored.

There are quite a few methods of struggle at the moment, for example:

1. Systematic monitoring of chemical emissions by large enterprises.

2. Modernization of equipment, investment in the development of filtration systems.

3. A ban on burning coal, especially on an industrial scale. Transfer of coal-fired power plants to environmentally friendly fuel.

4. Reducing the number of vehicles on the streets of cities in the presence of adverse weather conditions (dryness, heat, calm).

5. Prevention of evaporation of heated fuel particles (refuel city and personal vehicles in the morning or evening hours).

6. The introduction of electric public and personal transport is one of the most important steps in the fight against photochemical smog. The absence of exhaust gases will seriously weaken the chemical "base" for the formation of harmful fog.

7. Creation of natural ventilation. This is due to serious work on profiling the relief and creating cuts in mountain ranges.

8. Transition to environmentally friendly fuel, and installation of treatment facilities.

Listing above the sources of pollution, we highlight the role of ecological forensic expertise in establishing the crime, the crime scene, practically this is a closed space and specially guarded, where diversions are hidden, substances are stored, harmful waste or some parts of forests, where there have been cuts and illicit damage [2].

In the activity of the economic and social development society, in some technological processes, various materials and radioactive chemicals are widely used, which, in addition to the basic product, also bring certain toxic wastes. The circulation (processing, storage, and destruction) of these materials and substances are regulated by those corresponding state (STAS) and departmental regulations (instructions, regulations, etc.).

The benefits of recycling are manifold, so it's important that everyone understands that there are sound ideas and principles behind sweeping recycling laws that benefit society. In addition, recycling not only benefits the environment but also has a positive impact on the economy. Environmental benefits of recycling:

– Recycling significantly reduces their disposal in landfills, which not only greatly pollutes the environment, but also creates a deserted appearance of cities, destroying the health of people living around;

– Thanks to the recycling of waste, the amount of pollutants that usually enter the water and air when waste is disposed of in landfills is significantly reduced;

– Recycling reduces greenhouse gas emissions into the atmosphere. This is achieved by replacing primary raw materials with secondary ones obtained as a result of processing;

– Recycling saves society's energy costs in the long run if you think that the energy saved by recycling one bottle can power a light bulb for four hours;

– Recycling conserves the Earth's natural resources.

Potentially infectious waste and collection and transport activities cannot be done at random, but only by specialized companies. Medical waste is any hazardous or non-hazardous waste that is produced in the health facility.

1. Hazardous waste is waste resulting from medical activities that pose a real risk to human health and the environment (pathological waste and anatomical parts, cutting-stinging, infectious, chemical and pharmaceutical).

2. Non-hazardous waste is waste assimilated to household waste, resulting from the activity of medical, technical-medical, administrative, accommodation, food blocks, and food distribution offices.

Reducing as much as possible the amount of medical waste (hazardous and non-hazardous) is also achieved by reusing and recycling those categories of waste generated in the health unit preventing and minimizing hospital waste, to prevent their impact on health and the environment.

Materials used in medical practice, which are of long use (not disposable) can be recovered, reused, and recycled after being subjected to the proper sterilization process. Reusable materials and instruments used in laboratory tests are also subject to sterilization.

In the case of chemical and pharmaceutical waste, an important prevention and minimization measure would be for the health facility to purchase pharmaceuticals in relatively small quantities for use in medical treatment until the expiry date. If the healthcare unit has accumulated a large number of expired medicines, they should be returned to the provider.

The advantages of minimizing the amount of waste are represented by the protection of the environment, better protection of the work, the reduction of the costs regarding the management of the waste in the sanitary unit, the improvement of the communication relationship with the community members.

Traces of pollution can be detected in air, water, soil by taking evidence and conducting ecological forensic examinations according to gender, which detects the crimes and consequences of pollution: affecting the health of the population with certain harmful substances, loss of fauna and flora, etc.

The collection and separation of waste into categories are the first steps in the management of hazardous waste resulting from the medical activity.

If the waste is not separated into categories, the entire amount of waste is treated as hazardous waste.

Color codes of packaging in which waste is collected:

1. Yellow: for hazardous waste (infectious, stinging, chemical and pharmaceutical);

2. Black: for non-hazardous waste (waste assimilated to household waste).

Conclusions. 1. The ecological imbalance in the modern world has reached such proportions that the balance between the natural systems necessary for life and the industrial, technological and demographic needs of mankind has been disturbed.

2. The problem of our fellow citizens is the quality of water and limited access to it. Drinking water in Moldova is polluted by 90%. And the reason to a greater extent is the failure to comply with measures to protect sources of drinking water, as well as the problem with waste disposal.

3. The Bîc, Nistru, Prut River has been in critical condition for a long period of time and does not meet the regulatory requirements for surface water. The main reasons for this problem are the release of waste into the reservoir of coastal buildings, and city enterprises, as well as the lack of rain drains. All industrial wastes are discharged into the water, making it toxic and dangerous both for the inhabitants of the city and for the flora and fauna. To prevent pollution of rivers it is necessary:

– Cleaning the banks of the river from debris, as well as a ban on straightening the river, will increase the flow and volume of water.

– Installation of sewer drains for adjacent car washes, which will purify the water of the river from detergents and other toxic substances.

– A ban on the discharge of liquid poisonous waste from factories that pollute the river.

1. Certain rules must be strictly followed. Of course, at the moment we cannot completely abandon these chemical compounds. But science does not stand still, and perhaps, in a few decades, substances that are non-toxic to humans and the environment, which are now used on a smaller scale, will completely replace pesticides.

2. Thus, in order to improve the state of ecology, it is necessary that all residents of Chisinau be active, ready to monitor their actions, the decency of enterprises, and the availability of sewage for each economic agent, which will allow not to pollute water with toxic substances.

3. Every piece of garbage thrown away by us remains either on the banks of the river, penetrating into the ground in the process of decay and falling into the river, as well as onto the surface of the water through the winds. All of the above problems will have a devastating effect on the culture of bacteria and microorganisms.

4. The condition of almost all rivers in the Republic of Moldova, and most of them flow into the Dniester River, which enters the water taps of every inhabitant of Chisinau. Wastewater treatment plants play an important role in the process of water filtration, otherwise, pollutants would fall back, forming a cycle. All the garbage that is thrown out in places not designated for this, illegal buildings, no sewage, irresponsible work of city employees responsible for cleaning drain pits, all this leads to irreversible consequences.

5. Ecological judicial expertise and science should be out of politics. It is necessary to analyze the process of collection, accumulation, sorting (if necessary), and waste disposal in each region of the Republic of Moldova and abroad. Apply large fines for dumping rubbish in unauthorized places across the country. Sponsorship of waste recycling projects.

Перелік посилань

1. Calcatiniuc D., Grițco C., Chirsanova A., Boiștean A. The impact of organic food on the moldavan market. *Microbial Biotechnology*. Ediția 4, 11-12 octombrie 2018, Chișinău. Chișinău, Republica Moldova:

References

1. Calcatiniuc, D., Grițco, C., Chirsanova, A., Boiștean, A. (2018). The impact of organic food on the Moldavan market. *Microbial Biotechnology*. Issue 4, 11-12 October. Chișinău. P. 76. Retrieved from:

Institutul de Microbiologie şi Biotehnologie, 2018, P. 76. ISBN 978-9975-3178-8-7. https://ibn.idsi.md/sites/default/files/imag_file/76-76_1.pdf.

2. Cataraga O., Trifăuțan V., alt. METODICA TIP de efectuare a expertizei judiciare ecologice Cod. MT-12.03 „Examinarea biocenozelor naturale și artificiale", CNEJ MJ, PV nr. 1 din 12.02.2020.

3. Chirsanova A.; Resitca, Vl. Factori de bază ce influenţează politicile alimentare şi nutriţionale la nivel internaţional. *Meridian Ingineresc*. 2013, №.3, P. 86-90. https://ibn.idsi.md/ro/vizualizare_articol/27531.

4. Gavrilescu E., Olteanu I. Calitatea mediului (II). Monitorizarea calității apei. 2004, Ed. Universitaria, Craiova.

5. Gâlcă G. ș. a. Starea resurselor de apă. În: Starea Mediului în Republica Moldova în anul 2006 (raport naţional). Chişinău, 2007. P. 46-53.

6. Hotărârea Guvernului nr. 950 din 25 noiembrie 2013 „Pentru aprobarea Regulamentului privind cerinţele de colectare, epurare şi deversare a apelor uzate în sistemul de canalizare şi/sau în corpuri de apă pentru localităţile urbane şi rurale".

7. Hotărîrea Nr. 199 din 20-03-2014 cu privire la aprobarea Strategiei de alimentare cu apă şi sanitaţie (2014-2028).

8. Şalaru V., Şalaru V., Melnic V. Fenomenul „înfloririi" apei şi solului – aspect ecologice şi economice. *Revista Botanica.* 2011.Vol. III, Nr. 3, Chişinău. P. 20-28.

9. Майстренко В. Н., Хамитов Р. З., Будников Г. К. Экологический мониторинг суперэкотоксикантов. Москва, 1996. 320 с.

10. Митрохин О. В. Оценка транслокального загрязнения как составная часть социально-гигиенического мониторинга. *Здоровье населения и среда обитания*. 2001. № 9. С. 11-14.

https://ibn.idsi.md/sites/default/files/imag_file/76-76_1.pdf. (in English).

2. Cataraga, O., Trifăuțan, V., alt. METODICA TIP de efectuare a expertizei judiciare ecologice Cod. MT-12.03 „Examinarea biocenozelor naturale și artificiale", CNEJ MJ, PV nr. 1 din 12.02.2020. (in Moldavian).

3. Chirsanova, A., Resitca, V. I. (2013). Factori de bază ce influenţează politicile alimentare şi nutriţionale la nivel internaţional. Meridian Ingineresc. No. 3, P. 86-90. Retrieved from: https://ibn.idsi.md/ro/vizualizare_articol/27531(in Moldavian).

4. Gavrilescu, E., Olteanu, I. (2004). Calitatea mediului (II). Monitorizarea calității apei. Universitaria, Craiova. (in Moldavian).

5. Gâlcă G. ș. a. Starea resurselor de apă. În: Starea Mediului în Republica Moldova în anul 2006 (raport naţional). Chişinău, 2007. P. 46-53. (in Moldavian).

6. Hotărârea Guvernului nr. 950 din 25 noiembrie 2013 „Pentru aprobarea Regulamentului privind cerinţele de colectare, epurare şi deversare a apelor uzate în sistemul de canalizare şi/sau în corpuri de apă pentru localităţile urbane şi rurale". (in Moldavian).

7. Hotărîrea Nr. 199 din 20-03-2014 cu privire la aprobarea Strategiei de alimentare cu apă şi sanitaţie (2014-2028). (in Moldavian).

8. Şalaru, V., Şalaru, V., Melnic, V. (2011). Fenomenul „înfloririi" apei şi solului – aspect ecologice şi economice. Revista Botanica.Vol. III, No. 3, Chişinău. P. 20-28. (in Moldavian).

9. Maistrenko, V. N., Khamitov, R. Z., Budnikov, G. K. (1996). Ecological monitoring of superecotoxicants. Moscow. 320 p. (in Russian).

10. Mitrokhin, O. V. (2001). Evaluation of trans-local pollution as an integral part of social and hygienic monitoring. *Population health and habitat*. No. 9. P. 11-14. (in Russian).

11. Мур Дж., Рамамурти С. Тяжелые металлы в природных водах. Москва, 1987. 288 с.

12. Ревич Б. А. Проблемы прогнозирования, «горячие точки» химического загрязнения окружающей среды и здоровье населения России. Москва, 2007. 192 с.

11. Moore, J., Ramamurthy, S. (1987). Heavy metals in natural waters. Moscow. 288 p. (in Russian).

12. Revich, B. A. (2007). Problems of forecasting, “hot spots” of chemical pollution of the environment, and the health of the population of Russia. Moscow. 192 p. (in Russian).

РОЛЬ СУДОВОЇ ЕКОЛОГІЧНОЇ ЕКСПЕРТИЗИ У ПРИРОДООХОРОННІЙ СПІЛЬНІЙ ДІЯЛЬНОСТІ У СФЕРІ ЗАХИСТУ НАВКОЛИШНЬОГО СЕРЕДОВИЩА

О. С. Катарага
В. І. Тріфеуцан
А.-М. В. Кишляну

Екологічний дисбаланс у сучасному світі досяг таких розмірів, що порушується баланс між необхідними для життя природними системами та промисловими, технологічними та демографічними потребами людства. Забруднення має значний вплив на здоров’я людей, викликаючи багато захворювань, які також призводять до смертності, особливо в країнах, що розвиваються. Тому контроль забруднення є життєво важливим і має бути на першому місці в списку пріоритетів уряду.

Високі концентрації важких металів негативно впливають не тільки на навколишнє середовище, а й на здоров’я людини. У зв'язку з інтенсивним зростанням і розвитком промисловості, транспорту та хімізації сільського господарства в останні роки значно зросла кількість важких металів антропогенного походження. У цій статті проаналізовано найважливіші забруднювачі довкілля та ефективну співпрацю у вирішенні екологічних проблем.

Через призму екологічної судової експертизи встановлено негативний антропогенний вплив. Проведено дослідження різноманітності забруднюючих речовин за їх природою, концентрацією, тривалістю дії та негативними наслідками на організм людини.

Ключові слова: екологічна судова експертиза, екологічні фактори, забруднювачі, антропогенні фактори, здоров’я населення, міжнародне співробітництво.