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БЕЗОПАСНОСТЬ ЖИЗНЕДЕЯТЕЛЬНОСТИ

УЧЕБНОЕ ПОСОБИЕ

Министерство образования и науки РФ

Рекомендовано ГБОУ ДПО «Российская медицинская академия
последипломного образования» Минздрава России к использованию
в качестве учебного пособия в образовательных организациях,
реализующих образовательные программы по специальностям высшего
профессионального образования укрупненной группы специальностей
«Здравоохранение и медицинские науки»

Регистрационный номер рецензии 39 от 18 марта 2016 г.
ФГАУ «Федеральный институт развития образования»

Москва



**ИЗДАТЕЛЬСКАЯ ГРУППА
«ГЭОТАР-Медиа»**

2018

Theme 1

METHODOLOGICAL AND LEGAL BASES OF HUMAN HEALTH AND SAFETY

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1.1. Introduction

Over the XXI century, the world has become no safer. Traditional threats and dangers remain the same, and new ones are emerging. There are increasing social contradictions that increase the vulnerability of urban infrastructures to natural disasters, energy disasters, and terrorist attacks. New infectious diseases are spreading.

With the increase in the number of technical devices used in daily life, the risk of accidents is increasing due to violation of rules of operation and various faults in work. All these factors increase the risks for human life and health significantly.

In this regard, it is crucially important that the issue of safety should be the priority objective and the inner human need. This can be achieved through developing a new system of ideals and values, norms and traditions of safe behavior, i.e., formation of an entire culture of health and safety.

Safety is a necessary condition for further development of civilization.

At present, it becomes obvious that the decision to reduce the risk of various problems should not be limited to regulatory legal, organizational and technical and engineering measures. Effective safety management of the society and state should be implemented through the social sphere, through coordinated behavior and well-regulated social behavior rules (laws, regulations, traditions, science, and politics).

The leading role belongs to such factors as instruction in safe human behavior culture and promoting a healthy lifestyle.

1.2. Definition of life safety and related problems

The Life safety course is part of university curriculum; it is designed to integrate the knowledge needed to provide the comfort and safety of humans in interaction with the environment.

Health and Safety is an area of scientific knowledge covering theory and practice of protecting people from hazardous and harmful factors in all spheres of human activity, maintaining health and safety in the environment.

The course provides knowledge of complex relationships between the human body and the environment. The human body can safely tolerate certain influences as long as they do not exceed the limits of adaptation.

Knowledge in the field of safety is necessary for all members of society at all stages of life. Everyone should focus on personal and collective safety, which is the basis of public safety. Next, the society should improve its safety culture since a person changing their status from a learner to a doer and builder should know and always assess the possible negative consequences of their actions.

Therefore, the emergence of the study of life safety in Russia meets the need of society and the individual for protection against dangers, and the main purpose of this study is to accumulate and disseminate the knowledge about safety so as to reduce human mortality from external causes.

Health and Safety considers a significant number of problems and issues that ensure safety of the population and the environment, in particular:

- ▶ safety in the home environment;
- ▶ safety in the industrial sector;
- ▶ safety of life in the urban environment and human settlements;
- ▶ safety in the environment;
- ▶ health and safety of the population;
- ▶ emergency in peacetime and wartime, and other issues related to safety.

The basic principles of safety are:

- ▶ compliance with legal and regulatory requirements;
- ▶ balancing the vital interests of individuals, society and the state;
- ▶ mutual responsibility of the individual, society and state in ensuring safety.

Respect for fundamental safety principles should become the norm of life of every person, the entire society and the state. Effective utilization of this knowledge can significantly reduce human life losses arising from non-observance of a healthy lifestyle, neglecting the dangers of unreasonable choice of living conditions. Skillful use of this knowledge, even in the presence of eco-

conomic difficulties in the country, permits providing low risk living conditions, ensuring maintenance of health and the longest possible life span.

The main actor in providing the safety of life of the population is the state performing its functions through the legislative, executive and judicial power.

The issue of safety provision entails addressing a large number of tasks aimed to identify and eliminate factors with a negative impact on a person. In this regard, life safety addresses the following issues:

- ▶ identification (detection and quantification) the negative effects of habitat;
- ▶ protection from the dangers and prevention of various negative factors;
- ▶ eliminating the negative impact of hazardous and harmful factors;
- ▶ creating a normal, ie a comfortable condition of the human environment.

The main objective of the Health and Safety course is to equip the students with theoretical knowledge and practical skills.

1.3. The impact of environmental factors on human life and health

An analysis of social practice provides a basis for the assertion that any human activity is potentially dangerous. The potential danger lies in the hidden nature of the manifestations of the dangers.

Potential danger is the possibility of exposure to adverse factors or conditions which are incompatible with life.

With regard to the term «danger», life safety can be formulated in such a way: danger is a negative property of habitat affecting humans and resulting in impaired health or death.

According to the degree and nature of the impact on the human body all the negative factors are divided into two groups: harmful and hazardous.

Harmful factors are those that under certain circumstances can cause disease or reduced performance. The latter refers to decreased performance relieved after a rest or a break in the activity.

Hazardous factors are those resulting in traumatic injury or sudden and abrupt impairment of health.

This division is arbitrary because harmful factors in certain conditions may become hazardous.

Conditions creating the possibility of an accident are described as a dangerous situation. It is important to prevent a dangerous situation becoming an accident.

In the normal course of business and life, a person can find himself in a dangerous situation where the physical and psychological stress reaches such an extent when the individual loses the ability to act rationally and respond adequately. Such situations are called extreme.

During their life a person is closely connected with the outside world. Continuous interaction between man and his environment suggests that people and environment form a permanent human-environment system; it is in the process of this interaction that a person manifests their physiological and social needs.

The habitat means the environment consisting of a variety of factors (physical, chemical, biological, informational, social, etc.) that can have a direct or indirect, immediate or postponed impact on the life and health of man, and his offspring.

In the modern world man lives in two extremely different habitats: the natural one, that means dwelling in the biosphere, and man-made habitat that means dwelling in the urban environment where people work, play and rest.

Safety in the natural environment is one of the branches of ecology. Ecology studies the laws of interaction of organisms with the surrounding habitat.

The working environment comprises a set of factors that affect a person in the course of labor activity.

The development of civilization, by which we mean an advance of science, technology, economy, industrialization of agriculture, utilization of various forms of energy, producing machinery, use of various types of fertilizers and pest control, greatly increases the amount of harmful factors that affect man adversely. Protection against these factors is now an important issue of life and safety.

Invading the nature, producing new technology, people create an artificial habitat, the technosphere. Given that the general cultural and moral development of civilization is lagging behind the pace of scientific and technological progress, it becomes apparent that the health and life of modern man is now in greater danger than before.

In June 1992, Rio de Janeiro hosted an international summit on the problems of the planet Earth caused by the fact that the global environment is now changing much faster than ever before, and these changes are a real threat for future safety of people. The summit adopted a global plan of action to achieve sustainable development of our civilization.

Primary goals of sustainable development are as follows:

- ▶ finding ways to simultaneously provide economic growth and prosperity, while reducing consumption of energy, raw materials, and industrial waste;
- ▶ identify balanced patterns of consumption for the whole world, which the earth can sustain for a long time.

In this context, sustainable development means controlled development, consistent with the evolutionary laws of nature and society, that is, such a development, in which the vital needs of the people of the present generation are met without depriving future generations of their legacy. Human experience

has accumulated certain methods and techniques of safe interaction with the environment.

The result of negative external influence on the body depends on the properties and parameters of influencing factors and capabilities of the body.

Data compiled by the WHO indicate that human health depends largely (70%) on a person's behavior and the state of the environment.

Prevention of negative influence of these factors comprises three main areas:

- ▶ personal safe human behavior;
- ▶ implementation of public (collective) measures for life and safety;
- ▶ providing a quality habitat.

Personal safety measures are related to a rational choice of dwelling place, complying with the rules and norms of on-the-job safety, leading a healthy lifestyle which can significantly extend the life span of every individual, saving them from premature aging, disease and death.

At each stage of socio-economic development of the country, collective security systems exert a significant positive impact on the health of the population. They aim to provide a safe environment and ensure safe everyday activities, as well as an effective operation of safety alert systems and protection of the population from man-made and natural disasters. The effectiveness of collective action is largely due to a successful interaction of government agencies responsible for their implementation, the presence of legal and regulatory framework, the use of modern means and methods to protect people from negative factors.

Studies of human life safety in the technosphere confirm that it is the everyone's knowledge about the dangers of the world around us and how to protect against them that largely accounts for the management of personal and collective protection, which constitutes the basis of the concept of «culture of safety».

1.4. Characteristics of the main types of health and safety

In its structure, life safety is made up of various types of safe interactions between man and environment. Let us consider some types of safety that have a significant impact on human activity.

Environmental Safety

The issue of environmental safety is a particular part of the problem of safe existence of our civilization. In modern conditions provision of environmental safety becomes as important for the government, as provision of military and economic security.

Environmental policy of the state is a policy aimed at economic, social and cultural changes in the society, which are equally necessary for its survival and

preservation of nature. Appropriate regulatory framework was developed for this purpose. The basic law in the field of environmental safety is the Federal Law On Environmental Protection of 2002.

Environmental requirements are imposed on all economic entities regardless of their ownership and subordination, and on citizens of the Russian Federation. Environmental authorities and agencies for sanitary-epidemiologic supervision have the right to exert environmental control and to ban activities at all stages: design, location, construction, commissioning, operation of facilities.

The law guarantees the right of citizens to live in a healthy, favorable environment; it empowers citizens and public environmental organizations in protecting the environment, requesting environmental information, appointing environmental expertise, contacting administrative and judicial authorities for suspension or termination of environmentally harmful activities, filing lawsuits seeking compensation for damage to health and property.

Environmental control system comprises the state service for observation of the environment (monitoring), governmental, industrial, and public control. Monitoring is organized to observe physical, chemical and biological processes in the environment, the extent of pollution of the air, soil and water, the impact of pollution on flora and fauna, and to provide concerned organizations and the public with current and emergency information as well as prediction of environmental changes.

Environmental control is executed by the Russian Federal Service for Hydrometeorology and Environmental Monitoring (Roshydromet) and its field offices.

Other government bodies participating in environmental monitoring are: the State sanitary and epidemiologic surveillance (in terms of monitoring the adverse effects of environmental factors on human health), the Ministry of Agriculture in what regards contamination of soil, vegetation, water and snow with heavy metals, pesticides, nitrates, as well as the Russian Committee for land resources and land management and the Committee for geology and federal surveillance of nuclear and radiation safety.

The main burden falls on the state Roshydromet monitoring system. It comprises a network of observation stations watching the level of air, soil, surface water, marine, forest pollution, as well as the chemical composition of precipitation, snow cover, radiation levels.

Environmental authorities and the sanitary-epidemiologic surveillance have the right to impose a ban on constructing an enterprise, to take steps for administrative and legal termination of harmful activities, to bring perpetrators to justice for environmental offenses.

Environmental problems are global. In the Stockholm Declaration adopted at the United Nations Conference on the Human Environment (in 1972), 26 principles underlying international environmental cooperation were formulated. The Declaration proclaimed the right of people to life in a healthy environment. Earth's natural resources must be preserved for the benefit of present and future generations.

Russia became a member of multilateral conventions such as the Convention on the Protection of the Black Sea against Pollution (1992), Convention on the Protection of the Baltic Sea Area (1992), Convention on the Transboundary Effects of Industrial Accidents and the Kyoto Protocol on limiting the greenhouse emissions (1997). All these measures are aimed at improving the environmental situation.

Industrial Safety

Alongside with internal national factors of industrial safety, external factors have an influence as well. Accidents and pollution originating in one country have an adverse impact on the natural environment, human health and material objects in other countries. In this regard, states have agreed on joint action to prevent accidents, minimize and eliminate their consequences.

During development of its own legal measures in the field of industrial safety, Russia is obliged to comply with accepted international agreements and norms. This is due to Russia's prospects of entry in the European and global legal space, which deals with industrial and environmental safety.

Governmental policy in the field of industrial safety is aimed at creating legal, economic, organizational and socio-psychological conditions that would provide management of risks at hazardous industrial facilities.

The intensive process of legislative regulation of industrial safety began at the end of the XX century. At first regulatory acts mostly focused on the sources of risk inside the enterprise.

In developed countries, the overall legislative regulation in this area included issues of industrial safety in general, regulation of obligations in developing and implementing measures to counter emergency situations, issuing permits for enterprise construction, caring about the health of personnel and local population, environmental assessment.

In the field of industrial safety there is a single agency, which has licensing, controlling and oversight functions in the field of industrial safety. All these functions were handed to the Federal Environmental, Industrial and Nuclear Surveillance Service (Rostekhnadzor), as a result of the public administration reform in 2004, through a merger of functions previously performed by the

Gostekhnadzor, Nuclear Surveillance and Environmental Control. The new service has the central apparatus and regional agencies performing direct supervision at enterprises, industries and facilities.

Industrial safety regulation is carried out by establishing compulsory requirements, norms, rules, technical regulations. The basis of this mechanism is provided by federal laws and other pieces of legislation. Federal Service for Environmental, Technological and Nuclear Surveillance provides for development and approval of requirements for industrial safety:

- ▶ It coordinates laws and regulations and technical guidance documents of the federal executive authorities, which contain the following:
 - industrial safety requirements;
 - safety requirements for the carriage of dangerous goods;
 - requirements for rational use and protection of mineral resources;
 - safety requirements in the field of manufacturing, installation, operation, repairs and diagnostics of technical devices and equipment at hazardous industrial facilities;
- ▶ It ensures the functioning of the state automated informational management system for industrial safety regulation.

Industrial safety requirements are certain conditions providing industrial safety, relevant bans, restrictions and other mandatory standards. This, in turn, should ensure protection of the population and territories from emergency situations, environmental protection, environmental safety, fire safety, occupational safety, implementation of state standards.

Occupational safety is a system that provides safety of life and health of workers during their labor activity, including legal, socio-economic, organizational, sanitary and hygienic, medical and preventive, rehabilitation and other measures.

The main aspects of state policy in the field of occupational safety are:

- ▶ recognizing and providing the priority of life and health of workers over the results of industrial activities of the enterprise;
- ▶ establishing unified regulatory requirements for occupational health and safety at enterprises of all forms of ownership regardless of the field of economic activity and departmental subordination;
- ▶ state control of occupational safety including state supervision and control over compliance with laws or other regulations on occupational health and safety;
- ▶ public enforcement of legitimate rights and interests of workers in the field of occupational health and safety, carried out by trade unions and other representative organs;
- ▶ protection of the interests of employees affected by accidents at workplace or those developing occupational diseases, as well as their family members;

- ▶ carrying out effective tax policy stimulating provision of healthy and safe working conditions, development and introduction of safe equipment and technology, collective and individual protective gear;
- ▶ imposing economic sanctions in order to make the enterprises and employees follow the regulatory requirements for occupational health and safety.

Every worker has the right for occupational health and safety, including:

- ▶ the workplace protected from harmful or hazardous occupational factors;
- ▶ pay for damage caused by injury, occupational disease or other health impairment caused by performance of labor required;
- ▶ learning safe methods and techniques of work (paid for by the employer).

The state represented by legislative, executive and judicial authorities guarantees the right to occupational health and safety to the employee working under a labor agreement (contract) with an employer. Terms and conditions of the employment contract must comply with the laws and regulations on occupational health and safety.

Responsibility for the state of working conditions and occupational health and safety at the enterprise rests with the employer. It is the responsibility of the employer to ensure the safety of equipment, technological processes and raw materials used, compliance with laws and regulations and providing, in particular, medical check-ups at the commencement of employment and regular check-ups during employment.

Evaluation of the actual state of working conditions is based on assessment of workplace or special instrumental measurements of levels of industrial environmental factors that are entered on the map of the working conditions in the workplace.

1.5. Legal basis of health and safety

Nowadays the society is showing an increasing awareness of how pressing the problem of life safety and its legal support is. Although the process is not so fast as desired,,nevertheless Russia is building its legal base for provision of life safety in human activity in all habitats such as in households, on the workplace, in the environment and in emergency situations of natural and technogenic nature.

To provide life safety of a person in various spheres of his activities, the government must provide a system of protection against risks of natural, technogenic, social and political nature. Safety can be attained by carrying out a unified state policy aimed to protect the population by a system of economical, political, ecological measures that will be adequate to the endangered vital interests of an individual and the government.

The legal base in the field of life safety provision is the Constitution of the Russian Federation, the ultimate law of the state. Laws and regulations adopted in the Russian Federation cannot contradict the Constitution of the Russian Federation.

In March, 1992 Russia passed the Federal law On Safety which was the legal base of safety of an individual, society and state, and defined a safety system and its functions, establishing the order of organizing and financing the related agencies.

The law gives the definition of safety and its objects. According to the law, safety is a condition of having one's vital interests protected from internal or external threats, and this includes an individual, society and the state.

Providing environmental safety on the territory of the Russian Federation, developing and enforcing environmental law and order are based on the act of the Federal law On Environmental Protection of 2002 with measures of organizational, legal, economic and educational impact. The law contains a set of rules for protection of the environment in new conditions of economic development and regulates the relations concerning environmental protection in the sphere of all natural environment, without distinguishing particular objects that are protected by special legislation.

The objectives of legislation on environmental protection are:

- ▶ protection of the environment (and through it, protecting the health of individuals);
- ▶ prevention of harmful effects from economic or other activities;
- ▶ recovery of the surrounding environment and improving its quality.

Enforcement of the Law relies on a combination of economic methods of management with administrative legal measures providing environmental safety. The economical mechanism of environmental protection envisages financing, crediting, privileges, tax breaks upon implementation of environmentally clean technologies. These are direct environmental incentives for protection of the environment.

Administrative and legal influence can be through environmental expertise, environmental control, measures of administrative and legal restraint of harmful activities, imposing responsibility for environmental offenses. The Federal Law On Environmental Expertise of 1995 No. 174-FZ reflects these trends. Any business projects can be authorized and financed only after a favorable environmental expertise conclusion. In case of non-compliance with environmental requirements the law foresees suspension of activities and, simultaneously, termination of financing by financial institutions.

Industrial safety of dangerous enterprises is based on the law On Industrial Safety of Dangerous Enterprises. The federal law On Industrial Safety of Danger-

ous Enterprises No. 116 has been active since 1997. It provides the groundwork for provision of safe operation and prevention of accidents at dangerous enterprises and ensuring that organizations that operate dangerous enterprises are ready to localize and eliminate the aftermath of accidents. Changes in the domain of ensuring industrial safety were introduced by the Federal law No. 22 of March 4, 2013 establishing a division of dangerous enterprises into four classes depending on the extent of potential danger (extremely high, high, average and low).

The legal base for protecting the health and safety of population in Russia is composed of:

- ▶ The Constitution of the Russian Federation which in Art. 41 proclaims the right to health protection and delivery of health care, and in Art. 42 — the right of citizens to a favorable environment and compensation for inflicted health impairment.
- ▶ The federal law No. 323-FZ of November 21, 2011 On bases for protection of public health in the Russian Federation.
- ▶ The civil code providing adjudication of claims seeking indemnification for damage to health.
- ▶ The law On Sanitary and Epidemiologic Wellbeing of the Population (1991) regulates sanitary relations concerning protection of health from unfavorable environmental effects in the workplace, in households, and in nature. The law upholds the right of citizens to full indemnification due to damage to health resulting from violation of sanitary standards and rules that led to disease, or poisoning.
- ▶ The federal law On Protection of the Population and the Territories from Emergency Situations of Natural and Technogenic Nature (1994) determines legal regulations common for the entire Russian Federation. They envisage protection of the population, all land, water, and airspace within the Russian Federation, industrial and social facilities from natural and technogenic disasters. The main objectives of the law are preventing emergence and development of disasters, decrease in the extent of damage and losses and eliminating the disaster.

Harm to the life and health of an individual from unfavorable effects of the environment means complete or partial impairment of life-supporting functions. Such harm can lead to loss of health, life, negative changes in the genetic program of an individual.

When compensating the damage caused to health the following expenses are to be reimbursed:

- ▶ cost of treatment and recovery;
- ▶ expenses on compensation of financial losses due to the disability;
- ▶ forced change of residence;

- ▶ premature retirement;
- ▶ missed opportunity for professional or other activity and moral harm that needs to be redressed according to civil legislation.

The fundamentals of legislation on industrial safety in Russia provide a unified order of regulation of relations between employers and employees in institutions and organizations of all forms of ownership regardless of the sphere of their activity and departmental subordination. The legislation guarantees the right to industrial safety and aims to provide working conditions required to preserve the life and health of employees.

The legislation of the Russian Federation on industrial safety consists of the relevant regulations of the Constitution of the Russian Federation, primary legislation of the Russian Federation on industrial safety and legal or normative acts issued according to them.

Responsibility for violating laws and regulations on health and safety. Economic accountability provides an incentive for working on industrial safety; it may entail imposition of economic sanctions including exposure fee (paying for polluting the environment, differentiated rates of corporal property tax with regard to the extent of wear and novelty of the employed machinery and equipment) as well as denying quotas (for violating regulations, standards, requirements), imposing penalties to the extent of production stop. Penalties provide the necessary feedback for effective functioning of the system managing the risks. One of such sanctions is paying for pollution of the environment according to the principle «who pollutes pays» which is widely used in world economy practically by all countries.

The most important and effective instrument of providing industrial safety is the insurance against technogenic risks. The mechanism of insurance resembles the mechanisms of exposure fee as the premium depends on risk level. Insurance stimulates a decrease in risk, as it is more profitable for enterprises to invest money in events decreasing the risks.

In case of insurance against technogenic risks for citizens, the subject matter of an insurance policy can be the life, health, working capacity, integrity of property. Legal entities can insure their property for compensation of damage caused by an emergency; another possibility is liability insurance.

Liability insurance for causing damage when operating hazardous facilities. According to the Federal law On Industrial Safety at Hazardous Enterprises the organization is obliged to underwrite liability for life, health or property of citizens and the environment in case of an accident at the facility.

At the same time the possibilities of insurance are not boundless. Insurance is not a source of easy money for financing personal needs, nor a charity foundation, but a complex system of economic relations. Experience of other countries shows that the insurance industry not only sensitively reacts to

changes in economy, laws and regulations, etc., but also makes a considerable impact on economic processes.

The guarantee that laws and regulations will be complied with comes from **disciplinary, financial, administrative liability and criminal responsibility**.

The legislation of the Russian Federation not only establishes the responsibility of government bodies, enterprises, organizations, institutions for safety of the population, but determines the rights and responsibility of each citizen.

The Civil code declares that in the civilized world man is the supreme social value. According to this premise, the principle of priority of universal human values is consequently carried out; and commitment to maximal safety of an individual, his honor, dignity, rights and freedoms of citizens and their immunity is proclaimed.

The owners, heads and deputy managers of enterprises, institutions, organizations, and other persons responsible for compliance with the violated rules and regulations are held accountable for violation of the legislation on protection of the population.

Disciplinary liability of the persons named above comes from labor legislation; it may be in the form of disciplinary actions to the extent of dismissal from office.

Administrative liability comes for violations foreseen by the administrative legislation, the Code of the Russian Federation On Administrative Offenses in particular, as well as other regulations establishing administrative liability. Punishment takes the form of issuing a warning or imposing a fine.

Criminal responsibility of guilty officials can be applied if violations resulted or may have resulted in serious consequences. For example, death of people, mass diseases, accidents. Such issues are regulated by norms of the penal legislation.

Mutual liability of each citizen, society and government when meeting legal requirements for safety of vital activity of the population creates conditions for formation and development of a safe society, and sustainable development of modern civilization.

Key questions for self-control:

1. Health and Life safety: its definition and main objectives.
2. Basic principles of life safety.
3. Factors of the habitat and their characteristics.
4. Characterize the main types of life safety.
5. Characterize environmental safety.
6. Characterize industrial safety.
7. Labor protection: its definition, major trends in related government policy.
8. Legal basis of life safety, basic concepts.
9. Responsibility for violating laws and regulations on life safety.
10. Constitution of the Russian Federation. The right of citizens to a favorable environment and compensation of the damage caused to health.