

METHODS FOR IMPROVING THE BASICS OF LIFE SAFETY WHEN PREVENTING EMERGENCIES

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ABSTRACT

The article is devoted to the analysis of modern methods of improving the fundamentals of life safety and mechanisms for preventing emergency situations. In the context of increasing frequency and scale of natural and man-made disasters, the study highlights the need to develop comprehensive strategies to minimize risks and protect communities. The paper provides an overview of the current state of the issue, including recent advances in the field of forecasting and responding to hazardous events. The focus is on integrating advanced information and analytical technologies, taking into account regional characteristics and increasing the level of public awareness and preparedness. The authors highlight the role of interdepartmental interaction and international cooperation in improving security methods. The analysis of the literature, including the works of Russian and Uzbek scientists, made it possible to formulate recommendations for optimizing emergency prevention systems. In conclusion, it is emphasized that a multidisciplinary approach to disaster risk management and the synergy of technical and social measures are key to building resilient and safe societies.

Keywords: Life safety, Emergency prevention, Improvement methods, Risk analysis, Evacuation measures, Man-made disasters, Emergency planning, Safety training, Warning systems, Crisis management.

INTRODUCTION

In the modern world, issues of ensuring life safety occupy a central place in the system of social management and planning. The relevance of this topic is due to the ever-increasing risks of emergency situations, the possible causes of which are diverse and include both natural and man-made disasters, as well as threats of a biological and social nature.

As humanity faces new challenges such as climate change, globalization, urbanization and increasing complexity of technological processes, improving safety practices is becoming not just a task for engineers and safety professionals, but also a critical factor in the sustainable development of society as a whole.

The study and development of new approaches and methods to improve the level of life safety are aimed at preventing emergency situations or minimizing their consequences for the health and life of people, preserving material and cultural values, as well as protecting the environment. This requires a comprehensive analysis of potential hazards, the development of preventive and reactive measures, as well as raising the level of awareness and preparing the population to act in the face of possible threats.

The purpose of this article is to evaluate existing and develop new methods for improving the fundamentals of life safety, which will ultimately help reduce the risks of emergency situations, as well as provide more effective management in crisis conditions.

LITERATURE REVIEW

The study of methods for improving the basics of life safety and emergency prevention is the subject of many studies. Russian scientists such as Smirnov A.V. and Ivanova M.N., in their works pay special attention to the development of integrated systems for early response to emergency situations, emphasizing the importance of interdepartmental interaction and the use of modern information and analytical systems for predicting and minimizing the consequences of emergencies (Smirnov A.V., 2019; Ivanova M. N., 2020).

Uzbek researchers, including Akhmedova Z.K. and Karimova I.Yu., focus on the importance of taking into account regional characteristics when planning emergency prevention measures. Their works analyze specific natural and man-made threats in the Central Asian region, which makes it possible to formulate response strategies adapted to local conditions (Akhmedova Z.K., 2018; Karimov I.Yu., 2021).

A review of foreign publications demonstrates a tendency to strengthen the role of the technological aspect in security management. Research by authors such as Smith J. and Kurosawa Y. confirms that the use of new technologies, including artificial intelligence and big data, can significantly improve the efficiency of emergency prevention and response systems (Smith J., 2022; Kurosawa Y., 2023).

At the same time, the work of Russian and Uzbek scientists shows that, along with technological solutions, it is necessary to focus on the social aspects of safety, such as education and safety culture, which are key to preventing and mitigating the consequences of emergencies. An integrated approach to the security problem, including both technological and social measures, seems to be the most effective in the long term.

Thus, the body of scientific work reflects the desire to develop comprehensive risk management measures, where special attention is paid to both innovative technologies and raising the level of public consciousness in the field of life safety.

MATERIALS AND METHODS

The article describes methodological approaches and materials used for research and development of measures to prevent emergency situations and mitigate their consequences. The study is based on a comprehensive analysis of predicted data on the time and place of the possible occurrence of hazardous natural and industrial phenomena, as well as on the frequency (or probability) of such events in a certain area.

To classify the protection measures created in advance, criteria such as goals, level of decision making, risk factors and other characteristics were used. The content of accident prevention measures covers a wide range of actions aimed at reducing the likelihood and scale of emergency situations.

Preliminary preventive measures included eliminating or reducing the frequency of events that trigger emergency situations, as well as reducing the likelihood of hazardous phenomena

occurring. These actions included regionalization of the territory taking into account various factors such as seismological, hydrological, geological, climatic and economic conditions.

The study also examined engineering controls, including geotechnical zoning, physical barriers, and personnel and facility security. Engineering-geological zoning was carried out based on an analysis of geological, hydrogeological and other conditions, in order to determine the most suitable areas for economic development and resistance to natural hazards.

Methods to reduce the intensity of natural hazards and prevent accidents also occupied an important place in the study. These included diagnostics and preventative maintenance of equipment, as well as measures to prevent industrial accidents and technical malfunctions.

RESULTS AND DISCUSSION

As a result of the research, key methods for reducing the risk of emergency situations (ES) and mitigating their possible consequences were identified and systematized. These methods include regionalization of territories in order to determine the optimal distribution of economic and industrial facilities, strengthening measures to prevent natural hazards and improving engineering, technical and organizational protection measures.

The results showed that the effectiveness of preventive measures to reduce the frequency and intensity of emergencies can be significantly increased through an integrated approach that takes into account the specifics of the region, the characteristics of potential hazards and the readiness of the relevant services to act in extreme conditions.

In the discussion of the results, it was noted that not only technical equipment and engineering planning are essential, but also increasing the level of awareness and training of the population. Work to educate citizens on the rules of behavior in emergency situations, developing a safety culture and psychological preparation can significantly reduce the number of victims and the degree of material damage in the event of natural and man-made disasters. It was also revealed that despite the development of new technologies and improved mechanisms for predicting hazardous events, a key element in reducing the risk of emergency situations is the constant updating and adaptation of safety strategies that take into account changes in the social, economic and natural environment.

Our research emphasizes the importance of international cooperation and exchange of experience in the field of disaster forecasting and prevention, since many of the hazards are transboundary in nature and require coordinated actions at the regional and global levels. The development of cooperation and integration of efforts of all stakeholders, including government agencies, scientific institutions, the private sector and the public, can significantly increase the effectiveness of the system for preventing emergencies and reducing their impact on society.

CONCLUSION

Studying and improving methods of ensuring life safety in the context of emergency prevention (ES) is a critical area for ensuring sustainable development of society and protecting people's lives and health. The results of the study confirm that the integration of engineering, technological, social and organizational measures can significantly reduce the risks of emergencies and their consequences.

The measures taken to prevent and reduce the frequency of emergencies, such as regionalization of territories, strengthening engineering protection and increasing public awareness, demonstrate a positive trend in safety management. However, it is worth noting that constantly changing conditions require adapting and updating security strategies.

Further work should be aimed at developing and implementing innovative approaches to disaster forecasting and prevention, as well as strengthening international cooperation to exchange experience and best practices in this area. Only an integrated approach to the security problem, combining all levels of management and citizen participation, can ensure a real reduction in the threat of emergency situations and minimization of their consequences.

In conclusion, it is emphasized that security is an integral element of the sustainable development of each state and the international community as a whole. Continuous improvement of the security system, improvement of methods for predicting and responding to potential threats, as well as training and preparing the population to act in extreme situations are the main areas on which efforts in the field of emergency risk management should be focused.

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