



# ANALYZING THE ORGANIZATIONAL AND METHODOLOGICAL APPROACHES TO ENSURING THE SAFETY OF HUMAN ACTIVITY IN EMERGENCY SITUATIONS

E. M. Murtazayev

Professor, University of Information  
Technologies and Management  
murtazaev\_70@mail.ru,

Sh. U. Keldiyev

Inspector of the emergency situations unit at the Official Guests Reception  
House buildings under the Kashkadarya Regional Administration,  
nodirabegimurolova2@gmail.com

## Abstract

This article analyzes organizational and methodological approaches to ensuring human safety in emergency situations. The study examines the theoretical and practical aspects of risk-based management, integrated safety systems, safety culture, human factors, and the resilience concept. In addition, safety management mechanisms based on the requirements of the ISO 45001 and ISO 31000 international standards are analyzed. The research findings indicate that improving the effectiveness of protecting human life and health in emergencies requires the implementation of integrated approaches based on risk management, the development of safety culture, and consideration of human factors.

**Keywords:** Emergency situation, human safety, risk-based approach, safety culture, human factor, ISO 45001, ISO 31000, risk management.

## Introduction

Nowadays, ensuring human safety during emergencies is considered one of the scientific and practical problems of global importance. Due to climate change,

population growth, accelerated urbanization, and industrialization, the number of natural and man-made emergencies is increasing every year.

In recent years, strong earthquakes, floods, forest fires, droughts, and industrial accidents around the world have posed a threat to the lives and health of millions of people. According to UN disaster risk reduction data, climate change-related risks are increasing, and economic losses resulting from disasters are reaching trillions of dollars annually.

The global assessment report published in 2025 noted that the actual economic losses related to disasters exceed 2.3 trillion US dollars per year. It was also highlighted that over the past decade, direct economic damages have increased several times.

Researchers from the CIS countries and Uzbekistan have also conducted a number of studies on emergency safety, population protection, and risk assessment. These studies mainly focused on forecasting emergencies, evacuating people, developing a culture of safety, and monitoring risks. However, analyses show that research aimed at a comprehensive evaluation of organizational and methodological mechanisms to ensure human safety in emergencies-from the perspective of the human factor, risk-based management, and safety culture-is still not sufficient.



**Figure 1. Main types of emergencies: natural disasters, man-made accidents, and rescue operations.**



A risk-based approach is considered one of the most effective methods for managing emergencies. This approach focuses on identifying, assessing, and minimizing risks in advance.

Its main steps include: identifying sources of risk, assessing the likelihood of risk, analyzing potential consequences, determining the level of risk, and developing preventive measures.

Advantages: allows for efficient use of resources, helps prevent risks, and improves decision-making effectiveness.

Disadvantages: requires a large amount of data and there may be uncertainties in the assessment.

Integrated safety management approach: This approach is based on combining occupational safety, industrial safety, environmental safety, and emergency protection systems into a single management system.

Main tasks: implementing a unified policy in the field of safety, coordinating management processes, monitoring safety indicators, and improving preparedness for emergencies.

This approach aligns with the requirements of ISO 45001 and ISO 31000 standards and allows organizations to manage safety comprehensively.

International standards play an important role in improving systems that ensure human safety during emergencies. In particular, ISO 45001:2018 and ISO 31000:2018, developed by the International Organization for Standardization (ISO), are the most widely used regulatory documents in safety management and risk assessment.

The ISO 45001:2018 standard sets out the requirements for occupational health and safety management systems. The main goal of the standard is to protect workers' lives and health, reduce workplace hazards, and ensure safe working conditions.

The risk management process, according to the ISO 31000 standard, is carried out in the following steps:

1. Communication and Consultation Sharing information and collaborating with stakeholders.
2. Setting the Context Analyzing the organization's internal and external environment.
3. Identifying Risks Identifying sources, causes, and consequences of risks.

4. Analyzing Risks Assessing the likelihood and impact of risks.
5. Evaluating Risks Comparing risks with an acceptable level.
6. Responding to Risks Setting measures to reduce, prevent, or control risks.
7. Monitoring and Review: Continuously observing and assessing risks. The safety culture approach focuses on reducing human errors and promoting safe behavior. One of the founders of this concept is James Reason, who believes that many accidents happen as a result of human mistakes and organizational shortcomings.



**Figure 2. Processes of assessing and managing risks in emergencies.**

The main components of a safety culture are: safety-related knowledge, attitude towards safety, safe behavior, leadership's safety policy, reducing human-related risks through continuous training and monitoring, creating a safe environment in the organization, and improving preparedness for emergencies.

The Resilience approach is aimed at increasing the system's ability to adapt to emergencies and recover quickly.

This approach is based on the following principles: being prepared in advance, flexibility in dealing with risks, making quick decisions, mobilizing resources, and speeding up recovery processes.

The concept of stability plays an important role in modern risk management theory and forms the basis of emergency policies in many countries.

An approach based on digital technologies In recent years, digital technologies have become an important tool for ensuring safety during emergencies.

The following technologies are used in this: geographic information systems (GIS), artificial intelligence technologies, IoT sensors, drones, digital monitoring platforms, early warning systems.

This approach allows for real-time monitoring of risks and quick decision-making.

**Human-factor-based approach** In the human factor approach, employees' knowledge, skills, psychological state, and decision-making ability are considered the main factors.

This approach covers the following areas: professional training, psychological preparation, stress management, development of safe work skills, and analysis of human errors.

Research shows that 70–90% of man-made accidents are directly or indirectly related to human factors.

### Comparative analysis of approaches

No	Approach	Advantages	Disadvantages
1	Risk-based	Identifies risks in advance	Requires high demand for information
2	Integrated management	Provides comprehensive protection	Requires organizational changes
3	Safety culture	Reduces human errors	Long-term process
4	Sustainability approach	Ensures quick recovery	Requires a lot of resources
5	Digital technologies	Allows fast monitoring	High technological costs
6	Human factor approach	Improves employee readiness	Continuous learning is required

The proposed organizational-methodical model

The improved model for ensuring human safety in emergency situations consists of the following steps:

1. Identifying hazards.
2. Comprehensive risk assessment.
3. Analyzing human factors.
4. Developing preventive measures.
5. Organizing training and practice exercises.
6. Monitoring and early warning.
7. Rapid response to emergencies.
8. Evaluating results and improving the system.



This model ensures high efficiency in preventing hazards and minimizing their consequences.

In this situation, improving the organizational and methodological foundations for ensuring human safety in emergencies is important for addressing the following tasks: protecting human life and health, reducing the consequences of emergencies, minimizing economic losses, enhancing the stability of the population and regions, developing a safety culture, implementing digital monitoring and early warning systems, and contributing to the UN's Sustainable Development Goals by 2030.

**Conclusion** The analysis results show that in emergencies, a single approach is not enough to ensure human safety. The highest effectiveness can be achieved through integrating risk-based management, safety culture, human factors analysis, the resilience concept, and digital technologies. Therefore, implementing a comprehensive organizational-methodological approach in modern organizations and enterprises is an important factor in reducing emergency risks and protecting human life.

## References

1. Reason J. Human Error. Cambridge University Press, 1990.
2. Heinrich H.W. Industrial Accident Prevention. McGraw-Hill, 1931.
3. ISO 31000:2018 Risk Management – Guidelines.
4. ISO 45001:2018 Occupational Health and Safety Management Systems.
5. The Law of the Republic of Uzbekistan 'On Protecting the Population and Territories from Natural and Technogenic Emergencies'.
6. UNDRR. Sendai Framework for Disaster Risk Reduction 2015–2030.
7. Geller E.S. The Psychology of Safety Handbook. CRC Press, 2016.