

Risk management in the work environment

EMIR SMJEČANIN, HIMZO POPOVIĆ

FACULTY OF TECHNICAL STUDIES, UNIVERSITY OF TRAVNIK, BOSNIA AND HERZEGOVINA

ABSTRACT

Environmental Risk Management essentially has the goal to more reliably and comprehensively explore the state and the level of preparedness reached for all subjects in preventing the appearances, processes and events that risk the life and health of people, as well as the environment, and, based upon this, to assess the proposals and suggestions for further development of the Environmental Risk Management System.

This paper indicates that protecting and improving the life and health of people, as well as the environment is a dynamic process which is increasingly placed in the field of causes and decreasingly in the field of effects. Contemporary approaches in risk analysis are based on the availability of choosing actions and alternatives which lower the risk, i.e. on the belief that risk can be managed in cases where prevention has a special significance. The research results point at the necessity of creating a strategy for a unique Environmental Risk Management System, establishing a new functional organisational model in implementing measures for preventing and controlling the appearances, processes and events that risk the life and health of people, as well as the environment, and developing a Risk Management Information System, etc.

Keywords: risk, accident, management, prevention, information system, the environment, protection, safety, the quality of life, functional organisational model

Introduction

Human society is at an even greater divergence between an increase of needs and demands for safety and an increase in the number of different types of threats which constantly grow, expand and globalise in quality and intensity. The twentieth century, apart from a certain number of armed conflicts, is marked by numerous natural disasters and accidents of various types with worrying consequences. Floods, earthquakes, accidents in processing dangerous chemical substances, appearance of oil spills, air, water and soil pollution, etc. indicate not only the presence of accidents happening due to the intensive development and uncontrolled application of technological developments, but also to a high degree of endangering humans, their material assets and the environment. Concern for environmental protection has existed from the time of the first human civilisation, but, in the pre-industrial period, it was more spontaneous than planned. Now, at the

beginning of the 21st century, humans are compelled to change their attitude towards the environment and they have to undertake numerous protection measures to preserve it for further survival of humanity and all other species on our planet.

The new emerging civilisation satisfies its needs with significant damage to the biosphere, global climate changes, a lot of obliterated species, issues of waste disposal, an increase in human morbidity and mortality, etc. Long-term harmful consequences can significantly endanger humans, their property, the environment, institutions and the fundamental values of the country. Essentially, these consequences are by nature health-related, social, economic, ecological and security-related. Long-term harmful consequences can significantly endanger humans, their property, the environment, institutions and the fundamental values of the country. Essentially, these consequences are by nature health-related, social, economic, ecological and security-related.

An issue of how to better and more efficiently organise and prepare, how to provide the best possible coherence and functioning of activities and measures for preventing the appearance of accidents and how to impart meaning - both long-term and short-term - for the well-being of the future generations is raised for the society. The achieved level of scientific knowledge in this area indicates the need of having a comprehensive national programme which would serve as a statement of the community's competence in preventing the processes, appearances and events that risk the life and health of people, as well as the environment, and a starting point for the entire organisation of different participants in implementing specific measures and tasks in such situations.

This complex, comprehensive and multidisciplinary research is of special significance for applicability in real conditions whose goal is to:

- identify the biggest problems in the environment and their trends,
- indicate the necessary changes in the system,
- contribute to establishing such a functional organisational risk management model in the environment that can achieve efficient protection and
- promotion of the life and health of people, as well as the environment in contemporary conditions.

This requires the creation of new attitudes towards the environment, the area and natural resources with particular responsibility towards the future generations since a reasonable regard towards our lives, health and the environment represents an imperative of our existence and not only ours, but also the responsibility towards the collective world and the generations to come. The research strove to provide new knowledge, information and perception of objective opportunities for the existing organisations and institutions in preventing the appearances, processes or events that risk the life and health of people, as well as the environment.

Theoretical problem analysis

Major disasters are a historical companion of the society's development, they have always happened, even before Gutenberg. The recorded history and

mythology have an abundance of data on natural disasters. Humans have lived, live, and will live with the risks endangering their survival. In the past, natural accidents and infectious diseases have been especially prominent - "Black Death" (1345-1351) had around 43 million human casualties. The Great Plague (1664-1665), the plague, typhus, syphilis and dysentery ravaged Medieval and Renaissance Europe. Since then, there have been great advances in natural sciences and medicine which accomplished formidable results in suppressing the diseases that brought misery and death to a large number of people throughout the world.

Defining and classifying risks

Risk has a multidisciplinary general meaning and can be related to beings, things, numbers, money, and the like. It is an important parameter in decision making, it is flexible in relation to the specific system in a particular situation, and it is difficult to instrumentalise it. The term "risk" is used with different meanings in practice. Linguistically, it relates to a potential danger for humans and material assets. From a technical point of view, it represents a probability for the occurrence of human casualties, injury and trauma and/or loss of material assets and other values. Within this research, risk has been observed as the potential for the occurrence of a dangerous event, appearance or a process that can endanger the life and health of people, as well as the environment. Risk is a probability function for the occurrence and the consequence(s) of a specific dangerous event, appearance and process that is happening or can happen, which endangers the life and health of people, as well as the environment.

A feature of an approach is that risk can be quantified, i.e. that it is the product of two values:
1) the probability for the occurrence of an undesirable event and
2) the cost of the average consequences caused by the undesirable event.

Risk is like fire: If controlled it will help you; if uncontrolled it will rise up and destroy you.

Theodore Roosevelt

International standard ISO 31000:2009

Just like all other ISO Standards, the International Standard ISO 31000:2009 has a global character. During 2010, it experiences its application as the first International Standard for Risk Management in the world. It will help those organisations that have not previously applied risk management, as well as the companies that have adapted their strategies to the necessity of risk management but have not yet achieved the expected efficiency. This Standard

has been written taking into consideration the wide range of interests for different organisations. It not only provides information on the fact that business processes should generally be adapted to risk management, but also contains recommendations on how those business processes can be implemented through the application and implementation of the risk management aspect. As a framework for the integration of risk management in an organisation, it implies the authority, resources and the management system enabling an efficient risk management to take its place, improve and adapt to the necessities of the period.

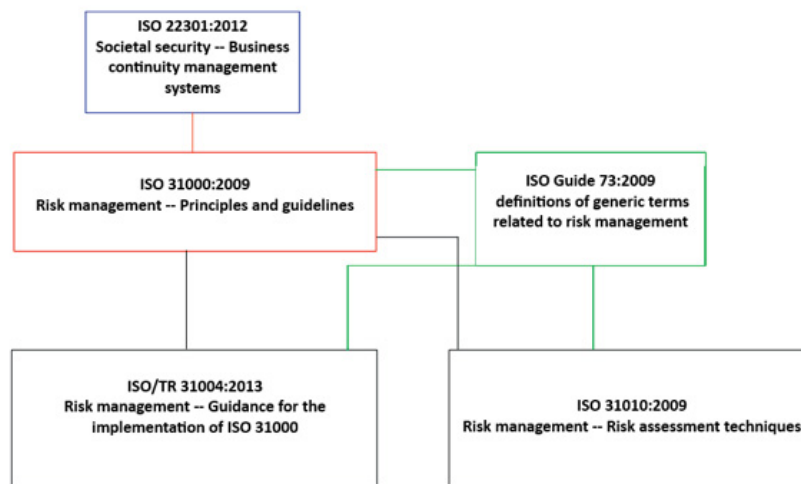


Image 1: ISO risk management standards

International Standard ISO 31000:2009 principles

For an organisation to be effective, it should adopt and act in accordance with certain principles. ISO 31000 Standard contains 11 main principles which are:

1. Risk management creates and protects value.
2. Risk management is an integral part of all organizational processes.
3. Risk management is part of decision making.
4. Risk management explicitly addresses uncertainty
5. Risk management is systematic, structured and timely .
6. Risk management is based on the best available information.

7. Risk management is tailored.
8. Risk management takes human and cultural factors into account.
9. Risk management is transparent and inclusive.
10. Risk management is dynamic, iterative and responsive to change.
11. Risk management facilitates continual improvement of the organization.

Risk menagment techniques

The following are the most frequently used risk management techniques, which does not mean that they are the only existing ones. The technique to be used depends upon several factors such as the current situation, necessity, opportunities, resources, the time needed for analysis, as well as other factors affecting the choice.

- Critical path monitoring technique
- The technique of comparisons based upon experience
- Risk prioritisation technique
- Risk classification technique
- The checklist technique
- Integrated planning and termination technique

Risk management methods

There is a large number of different methods and the choice of which method will be used and in what way depends upon the situation, conditions, opportunities, resources and goals. Two fundamental principles for the risk management issue are:

- 1) prevention - by applying protection methods, contractual clauses, through experience and the like,
- 2) rectification - most frequently through compensation for damage from the insurance company or those who caused the damage.

Risk response planning

Risk response planning is a process of developing options and actions for improving the opportunities for reducing or eliminating threats to the project goals. In this phase, it is necessary to ensure that each risk has its own risk carrier in charge of monitoring the risk and implementing assurance measures.

Risk response includes the following techniques:

- risk avoidance,
- risk transfer,
- loss management,
- resource sharing and
- risk acceptance

Chance favors the prepared mind.

Louis Pasteur

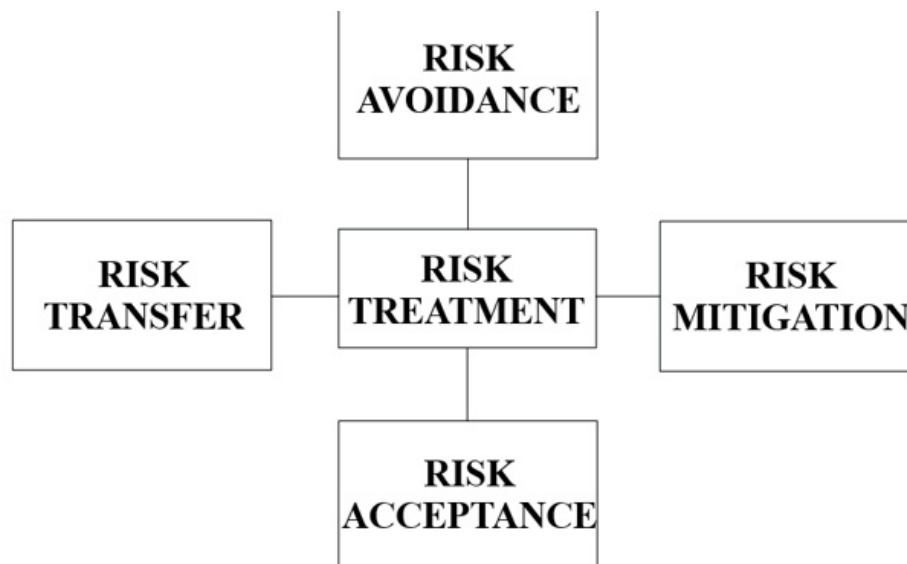


Image 2: Risk treatment according to ISO 31000:2009 standard

Risk avoidance

Risk avoidance implies a change of concepts, demands, specifications or mode of operations with the purpose of reducing the risk to an acceptable level.

Risk transfer

Risk transfer implies the transmission of risk from one part of the system into another, or dividing the risk among users and executors

Risk mitigation

Risk control implies risk regulation which does not include attempts to eliminate the cause of the risk, but attempts to reduce the cause.

Risk acceptance (risk-taking)

Risk acceptance implies recognising the presence of risk and a conscious decision to accept the risk without introducing special (additional) measures to control it.

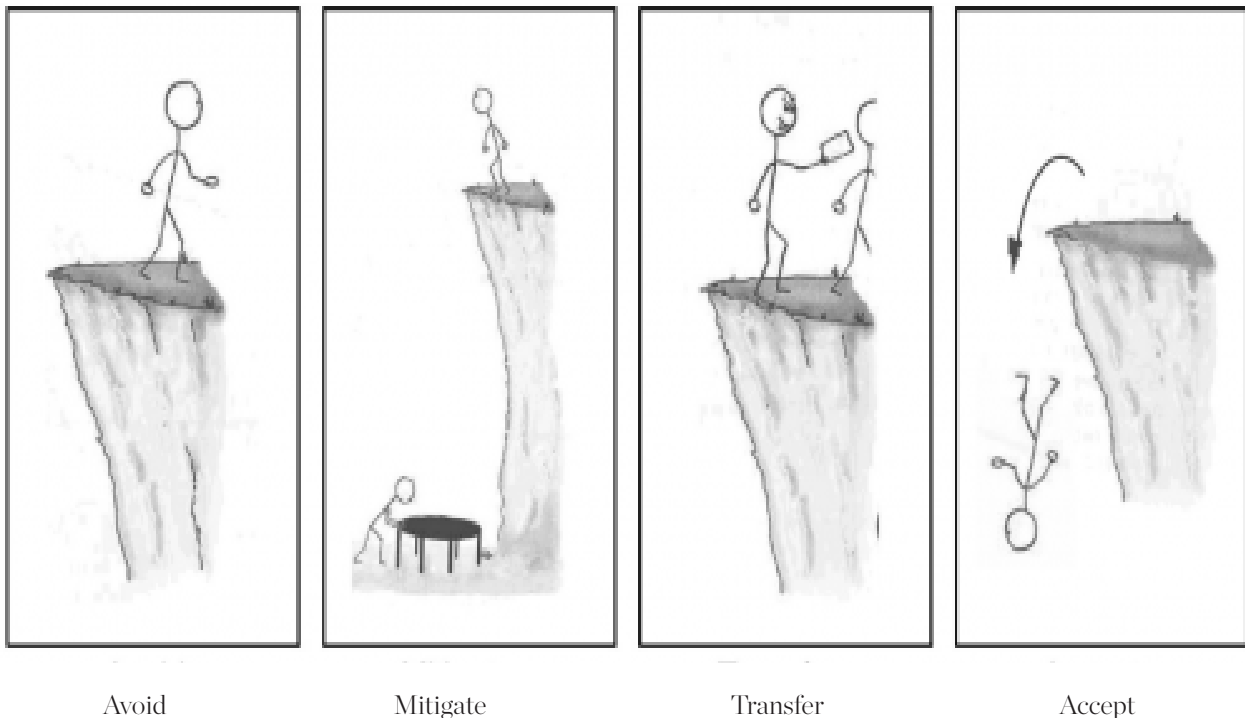


Image 3: Risk response techniques

Conclusion

It can definitely be concluded that risks are an inevitable part of our lives. Since we cannot avoid them, there is a need for a tool enabling us to fight them. It is necessary to manage risks. Currently, ISO 31000:2009 Standard is the most modern and most developed risk management system. The wealth of standards describing how to manage risks, management methods and risk assessment methods indicate that risk management, alongside quality assurance, is a highly significant discipline that should by no means be disregarded.

Risk management is currently being developed and some standard models for general problem solving which we can encounter in business are just being developed. A lot of time will probably pass before we get some simple programme packages which will be able to easily assess certain things of interest. Nevertheless, there is a multitude of tools that can help us solve problems when it comes to risk, but this requires certain knowledge and experience.

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Upravljanje rizicima u životnoj sredini na radnom mjestu

SAŽETAK

Upravljanje rizicima u životnoj sredini u osnovi ima za cilj da pouzdanije i svestranije istraži stanje i dostignuti nivo pripremljenosti svih subjekata u sprječavanju pojava, procesa i događaja koji ugrožavaju život, zdravlje ljudi i životnu sredinu, i na osnovu toga, da ocijene, prijedloge i sugestije za dalji razvoj sistema za upravljanje rizicima u životnoj sredini. Rad ukazuje na to da su zaštita i unapređivanje života, zdravlja ljudi i životne sredine dinamičan proces koji se sve više nalazi u sferi uzroka, a sve manje u sferi posljedica. Suvremeni pristupi u analizi rizika polaze od mogućnosti izbora akcija i alternativa kojima se rizik smanjuje, odnosno od uvjerenja da se rizikom može upravljati tamo gdje prevencija ima poseban značaj. Rezultati istraživanja upućuju na potrebu izrade strategije jedinstvenog sistema za upravljanje rizicima u životnoj sredini, na uspostavljanje novog organizaciono-funkcionalnog modela u provođenju mjera za sprječavanje i kontrolu pojava, procesa i događaja koji ugrožavaju život i zdravlje ljudi i životnu sredinu, kao i na razvoj informacionog sistema za upravljanje rizikom i dr.

Ključne riječi: rizik, akcident, upravljanje, prevencija, informacioni sistem, životna sredina, zaštita, bezbjednost, kvalitet života, organizaciono-funkcionalni model

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Correspondence to: Emir Smječanin, University of Travnik, Faculty of Technical Studies, Travnik, Bosnia and Herzegovina

E-mail: emir.smj@gmail.com