

Analysis of Environmental Risk of Technogenic Nature – A Stage In Environmental Insurance of Industrial Enterprises

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Abstract

The article presents elements of risk situations in enterprises with hazardous production. Analysis of risk of technogenic nature is presented in the context of risk management of industrial entities. The importance of insurance is outlined as an element of risk management in industrial enterprises.

Keywords: environmental insurance, environmental risk with technogenic nature, corporate risk management, environmental pollution responsibility, environmental management

Introduction

The aim of this article is to analyze the environmental risk of technogenic nature as an element of corporate risk management in an industrial enterprise. In this relation a classification of reasons and consequences is made as a result of the manifestation of environmental risks of technogenic nature in industrial enterprises. The focus is placed on the knowledge and assessment of risk, which form the basis of insurance premium determination in liability responsibility against environmental pollution of industrial entities.

The dynamic development of production processes and changes in the internal and external environment of the economic entities define the issues of risk management as increasingly important and the role of Enterprise Risk Management (ERM) as increasingly relevant.

The risks associated with production activities of industrial enterprises are divided into two major groups, as shown in the specialized literature *sources*:¹

- risks related to the environment:
 - contamination of components of the environment in the course of production activity;
 - risks resulting from industrial accidents with environmental consequences;
 - risks associated with worsening health of the population and the staff of the enterprise;
 - risks associated with the reduction of social and cultural well-being;
 - risk of ecosystems destruction.
- environmental risks of the enterprise:
 - financial losses related to coverage of damages liquidation of consequences and recultivation;
 - financial losses associated with additional social obligations;
 - risks associated with the worsening image of the enterprise;
 - third party claims, related to the responsibility against industrial enterprises pollution of environment, etc.

Increasing the consequences of the manifestation of industrial – environmental risk in a number of enterprises is due to the following *reasons*:²

- growth in the increasing complexity of production processes;
- increase in the risk sources in industrial enterprises;

¹ Соколова, М., А. ЭКОЛОГИЧЕСКИЕ РИСКИ. ИМС, Montan, Minex Club, июнь 2012, с. 2.

² Афанасьева, О., В. Развитие методических основ оценки эффективности страхования производственно-экологического риска, http://ogbus.ru/authors/Afanasjeva/Afanasjeva_1.pdf, с. 2-3.

- occurrence of dangerous natural phenomena and processes caused by technogenic risk factors;
- presence of a „chain” of confounding factors and interaction of the components of the environment;
- violation of the technological requirements during the production process.

The correct risk analysis implementation as a stage in the risk management process is a prerequisite for the adequate carrying out of the next stage – **risk assessment**. This stage, by itself, lies in the basis of determination of the cost of environmental protection upon responsibility insurance against environmental pollution of industrial entities.

The first step in the process of risk situation analysis is the *collection and distribution of information* about nature, anthropogenic and technogenic risks, associated with the production activity. This way the risk situation is becoming familiar and possible threats, related to environmental pollution are identified. Therefore this step could be defined as *risk identification*. Risk identification sets out to identify an organisation's exposure to uncertainty. This requires „an intimate knowledge of the organisation, the market in which it operates, the legal, social, political and cultural environment in which it exists, as well as the development of a sound understanding of its strategic and operational objectives, including factors critical to its success and the threats and opportunities related to the achievement of these objectives”.³

To facilitate the information exchange and to prevent future industrial failures the member state of the European union „should forward information to the Commission regarding major accidents occurring on their territory, so that the Commission can analyse the hazards involved, and operate a system for the distribution of information concerning, in particular, major accidents and lessons learned from them. That exchange of information should also cover „near misses” which Member States regard as being of particular technical interest for preventing major accidents and limiting their consequences”.⁴

The second step is to systematize the reasons and consequences of the manifestation of environmental risks of technogenic nature in industrial enterprises. They are presented in Fig. 1.

³ A RISK MANAGEMENT STANDARD, <http://www.ferma.eu/app/uploads/2011/11/a-risk-management-standard-english-version.pdf>, p. 6.

⁴ DIRECTIVE 2012/18/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 4 July 2012, (24).

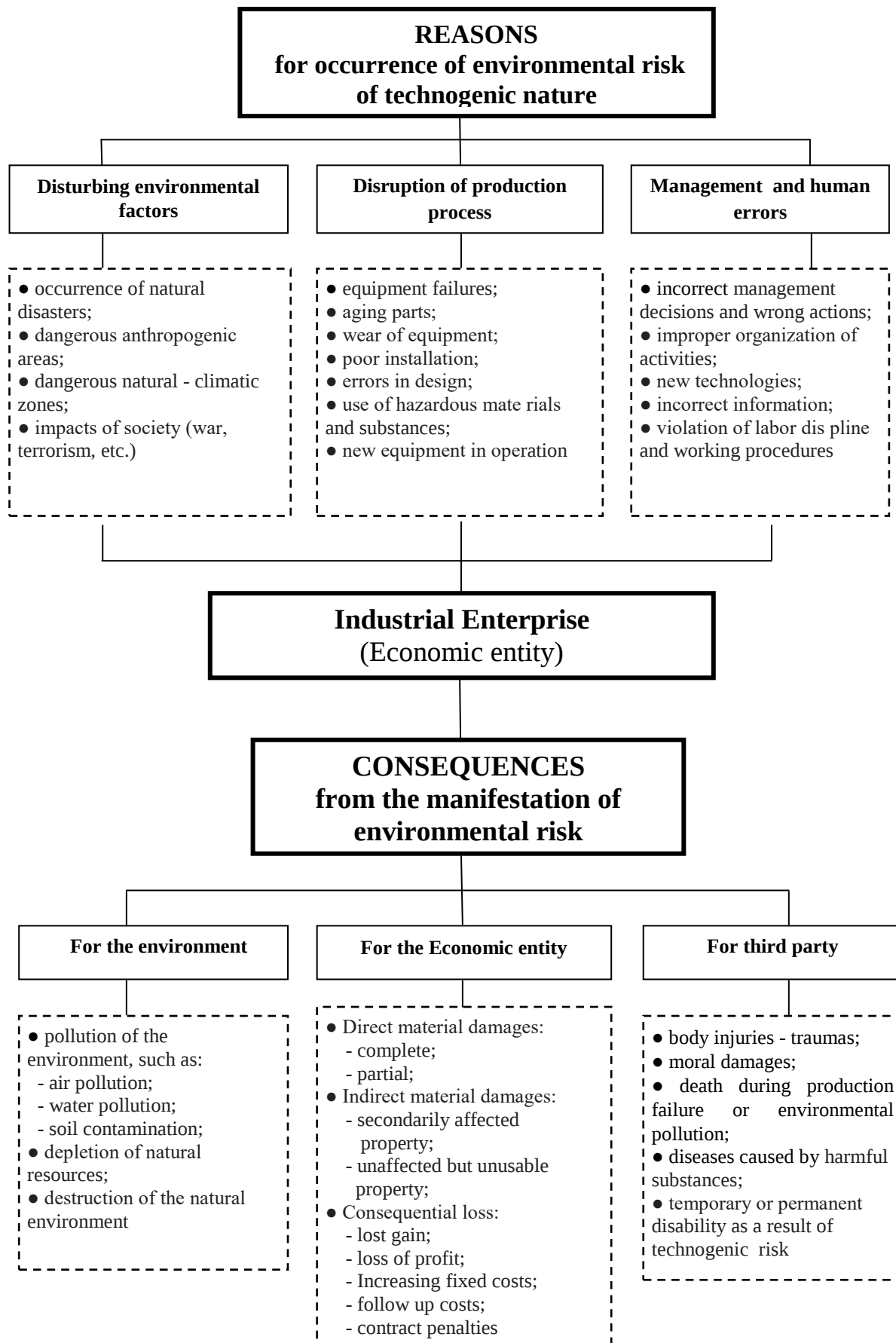


Figure 1. Elements of the risk situation of enterprises with hazardous production

The continuous changes in the internal and external environment where the industrial entities function require the application of adequate risk management. The analysis and control over the risk factors of environment are a prerequisite for an effective risk management of enterprises.

The third step is connected to arrangement and characterization of threats, which could lead to environmental pollution as a result of the production activity of industrial enterprises. This step is also known as *risk description*. The objective of risk description is „to display the identified risks in a structured format, for example, by using a table. The risk description table overleaf can be used to facilitate the description and assessment of risks”.⁵

Effective risk management is essential for the competitiveness of industrial entities. One of the most important competitive advantages of enterprises is the quick response to all changes in the environment, proper risk management and control over the process of risk management.

The prospects in development of the environmental risks management are determined by the complexity of risk factors, dependence and interaction between them and their impact over the overall risk situation in enterprises with hazardous production.

Under uncertainty and insecurity of the environment, industrial companies can only achieve sustainable economic growth through the application of adaptive risk management concept.

The environmental risk management in various industries is considered „an activity of risk balancing” that creates „favorable working environment for companies, minimizing and eliminating damages to the environment or third parties. It also reduces costs associated with production activities and natural events and helps to maintain a positive brand image among various stakeholders”.⁶

In the context of risk management of businesses, environmental risk assessment (ERA) traditionally focusses on impact functions (i.e. environmental exposure assessment) and response functions (i.e. ecological effects assessment). In the chemical industry field for example, adopting an ecosystem services approach means that ERA needs to be extended to include the link to ecosystem services. This may involve:⁷

- refining existing methodologies to provide information on more relevant endpoints;
- developing new approaches for assessing the effects of chemicals on structure and functioning of ecological entities of interest;
- enhancing and applying ecological understanding of causal relationships between biophysical structure, functioning and service provision;
- developing models to translate outputs from eco-toxicological studies to estimates of ecosystem service delivery.

Practice shows that environmental insurance is one of the most important tools of risk management and one of the most effective measures in the concept of security companies.⁸ With the help of effective underwriting politics the insurers could increase their competitiveness, as well as the demand for insurance services by industrial enterprises.⁹

⁵ A RISK MANAGEMENT STANDARD, <http://www.ferma.eu/app/uploads/2011/11/a-risk-management-standard-english-version.pdf>, p. 6.

⁶ Environmental Risk Management. A REPORT BY HARVARD BUSINESS REVIEW ANALYTIC SERVICES, <http://www.ferma.eu/app/uploads/2013/10/environmental-risk-management-report.pdf>, p. 10.

⁷ Chemical Risk Assessment – Ecosystem Services. EUROPEAN CENTRE FOR ECOTOXICOLOGY AND TOXICOLOGY OF CHEMICALS. Brussels, December 2015, ISSN-0773-8072-125 (print), ISSN-2079-1526-125 (online).

⁸ Misheva, Ir. Main features and particularities of the environmental pollution liability insurance. The Second International Conference on Advances in Social Science Management and Human Behaviour – SMHB’14, 25-26 October 2014, Zurich, Switzerland, organized by Institute of Research Engineers and Doctors – IRED, USA, published by SEEK Digital Library, ISBN:978-1-63248-032-3, p. 168-172, <http://www.seekdl.org/nm.php?id=4572>.

⁹ Misheva, Ir. The Underwriting Process in the Environmental Pollution Liability Insurance for Enterprises with Hazardous Waste Production. – Economic Alternatives, Sofia, UNWE Publishing Complex, 2015, ISSN 1312-7462, Issue 4, 2015, p. 34-46, <http://www.unwe.bg/uploads/Alternatives/4-Misheva.pdf>.

Conclusion

These significant issues related to environmental protection require insurance companies to improve insurance protection against the increased demands of society. Insurers should attune insurance products to individual risk situation of businesses and to support risk managers in choosing the best insurance service among alternative options.

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