

ЭКОЛОГИЧЕСКАЯ БЕЗОПАСНОСТЬ КАК ЭФФЕКТИВНЫЙ ИНСТРУМЕНТАРИЙ РАЗВИТИЯ ИННОВАЦИОННЫХ БИЗНЕС-СТРУКТУР

ENVIRONMENTAL SAFETY MANAGEMENT AS A POWERFUL TOOL OF INNOVATIVE BUSINESSES DEVELOPMENT

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Annotation

In this article some issues of environmental safety management for providing competitive and effective activity of the industrial enterprises are considered. The authors show the relevance of applying innovative production management personnel, qualified analysis, forecasting, decision-making and responsibility, taking into account various environmental aspects of the company; the authors also analyze the results of an environmental policy within the limits of social responsibility of industrial enterprises.

Keywords: innovative production, environmental safety, industrial enterprise, environmental management, quality management, environmental policy, social responsibility.

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Аннотация

В статье рассматриваются вопросы управления экологической безопасностью для обеспечения конкурентоспособной и эффективной деятельности производственных предприятий. Автор показывает, что для инновационного производства необходимо использовать управленческие кадры, обладающими компетенциями анализа, прогнозирования, принятия решений и ответственности с учетом различных экологических аспектов деятельности предприятия; анализирует результаты экологической политики в рамках социальной ответственности производственных предприятий.

Ключевые слова:

Инновационное производство, экологическая безопасность, производственное предприятие, экологический менеджмент, менеджмент качества, экологическая политика, социальная ответственность.

The problem of managing an industrial enterprise within the framework of environmental safety is becoming increasingly important. At present, almost every company is developing its production in an anthropogenic way. This resource-intensive type of development is based almost permanently on the use of artificial means of production created without any environmental constraints [6,7,13]. The main features of this type of development are constantly increasing volumes of involvement of not capable of self-repair and self-renewal natural resources into the production process, as well as an increased degree of exploitation of renewable resources at a rate exceeding the rate of natural reproduction and restoration. The current

period of economic development is directly determined by the intensification of production, increase in the volume of natural resources involved and it is constantly increasing the degree of man-made pollution of the biosphere [8].

The main drivers of environmental reengineering are usually considered as: government regulation; self-awareness of the owner of the enterprise, social movement. State regulation in the modern Russian economy plays a crucial institutional and political role in environmental modernization [11,12]. This is evidenced by the recent initiatives of the government. The requirement for environmental safety highlights the determination of the list of environmental and

economic incentives for companies using natural resources. An effective solution to the environmental problems in the modern economy is impossible without an effective environmental management system which allows the enterprise to manage the emerging risks and opportunities. Environmental risk associated with the level of product contamination, unacceptable to the level of domestic and foreign markets, injuries and diseases of the workers, the local population, pollution problems undermines the position of the company on the national and international markets. As part of the environmental management, a systematic approach to solving environmental problems is carried out within strategic and operational activities of the company.

Many researchers associate problems of environmental safety with the crisis of management [1,3]. To overcome the crisis it is necessary to use high-quality management resources, including not only the subject-object relationship, but also national traditions, mentality, values, and sense orientation, quality and standard of living, development priorities of the country having high-tech national potential.

To implement management strategies to bring the country to a new level there is a need for sociological analysis of social changes, as well as management training. Management of the company is not a one-way "exposure social object as the subject of management", and purposeful process of interaction between the subject and object of management in order to achieve any result [2]. Consequently, feedback plays an important role in functioning of the entire management system. Feedback brings in additional motivation of employees to make progress: workers set higher goals, develop more successful strategies and achieve better results.

In order to solve environmental problems in the company, to achieve sustainable ecological and economic development one will require a new system of ideas and innovative methodologies. The environmental situation in which we operate current economy necessitates a holistic review of the economic problems in terms of management as a way of preserving the environment. The environmental management system provides a solution to the organization of environmental issues through the rational use of available resources, distribution of responsibilities and ongoing evaluation activities.

For effective solution of management tasks it is necessary to adequately supervise and direct the activities of the enterprise in order to comply with environmental legislation, to educate and involve the work of all departments of the enterprise. In the framework of market-oriented environmental and social management, the key function of a manager is to identify the opportunities and risks of future activities of the enterprise and the formation of appropriate pro-

duction strategy. However, while making management decisions one should take into account the environmental specific features: a significant focus on the environment; interpretation of the latter as a value with a greater meaning for society than just the utility; the priority of the global interests over those of individual communities.

Businesses need to create conditions for preservation of the environment, the development of environmentally friendly products with a high level of competitiveness; intensify its sales to obtain additional income by increasing the sustainability of industrial production and access to markets with high requirements for the environmentally friendly production and products characterized by high margins and disposal of all industrial waste in accordance with environmental legislation. The design stage of such products has to involve approaches and design solutions that promote efficient, rapid and complete processing of products and packaging materials. Saving the environment suitable for life, both now and in the future becomes an important aspect of any business. In this regard, the company needs to take on social responsibility and to participate in harmonizing the interests of the economy and the environment. This is the essence of social and ethical management – bringing together the interests of producers, consumers, society and the environment. Management decisions are discussed in the context of changes in the philosophy of the market, meaning the transition to ethics, compatible with sustainable development, i.e., shifting the focus of entrepreneurial culture from competition to cooperation. Management of ecological safety should be considered as the prime driver of the process of improving the environmental performance of the enterprise. It follows that one of the aspects of management – it is a well-written environmental policy. Environmental policy should reflect the commitment of top management, compliance of decisions with the legislative, regulatory, technical and other requirements, as well as the principle of continuous improvement. Environmental policy is the basis for setting the goals and objectives of the company [9]. The principles of environmental policy must be clear to all stakeholders inside and outside the enterprise. They need to be systematically evaluated and reviewed to ensure that environmental policy fully reflects the current situation of the company. The company needs to establish certain environmental parameters that must meet both its activities and its products and services. Moreover, it should monitor its compliance with the selected parameters. Such measures are necessary in order to identify the most important environmental aspects of the company, the most influential on the environment. Administration of the enterprise must ensure that all important environmental aspects take into account setting environmental policy objectives. There is a list of attributes that must comply with the environmental policy of the enterprise. Average quality of environmental policy achieved by leading production companies, both worldwide and in Russia, is analyzed in **Table 1**.

Table 1.

Frequency of using basic principles of environmental policy by the leading industrial enterprises.

Principles of environmental policy	Use of the principles of environmental policy by enterprises, %	
	Leading international industrial enterprises	Leading industrial enterprises in Russia
1. Minimizing negative impact on the environment	85	76
2. Compliance with environmental legislation	77	64
3. Involving all employee`s in participate in various environmental activities	67	64
4. Developing and distributing environmental reports of an enterprise	42	18
5. Transparency of environmental reports of an enterprise	80	29
6. Reasonable and efficient use of resources of an enterprise	52	41
7. High environmental performance	66	24
8. Preventing negative impact on the environment	50	41
9. Implementation of Self-motivated Environmental Activities	41	12
10. Cooperation with other enterprises and community within the framework of environmental policy	81	47
11. Provision of health and safety of employee`s and the community	44	47
12. Environmental Risk Management	28	62
13. Environmental awareness of resource management, social responsibility of an enterprise	37	8
14. Striving for environmental leadership	7	12

Analysis of the suggested list of attributes used to evaluate whether the enterprise follows the principles of environmental policy, outlined in the international standard ISO 14000, provides an opportunity to examine the extent of use of these indicators by the major enterprises in the world and in Russia (in Russia this series of standards was adopted and is known as the national GOST R ISO 14000) [4]. The frequency of use of the principles of environmental policy (axis X, Table 1) is shown in Figure 1.

The graph shows that in Russia not all manufacturing companies adhere to the principles of environmental policy. According to some figures there is a significant lag compared with the industrial enterprises in the world. However, the process of formation of environment-oriented market space in Russia has already begun, and the top-management of many Russian industrial enterprises adheres to the innovative approach in environmental management. Environmental management system means that all employee`s whose work may significantly affect the environment, should be trained to understand the actual or potential impact of their activities on the environment. They should

have the necessary knowledge, techniques and skills required to competently perform their tasks and enjoy the view of the negative environmental impacts that their activities may have, if it is done incorrectly. Every employee of the company should know and comply with environmental legislation (within its competence), their job descriptions and bear responsible in case of violations. Requirements and standards of environmental legislation may also be included a separate sections in the manufacturing process descriptions. Innovative enterprises need special instructions for specific aspects of the protection of air and water, collection and disposal of waste. In effective implementation of the decisions a crucial role is played by a control stage which involves the use of techniques such as diagnostics, allowing a clear view of the implementation of solutions and correction, enabling to make improvements and changes of the activities to ensure the feasibility of the real decision-making.

International standards in the field of environmental management include the need of a systematic and regular internal and external audits of environmental management systems.

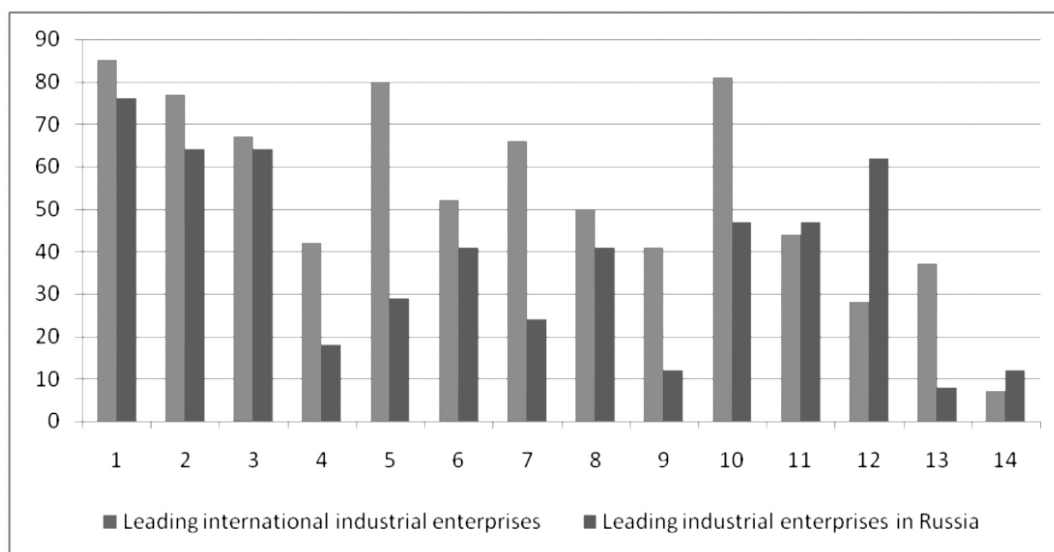


Figure 1. Frequency of using principles of environmental policy by the leading industrial enterprises [2]

Under the environmental audit we imply inspection and evaluation of the status of legal entities and individual entrepreneurs in their environmental management and protection of the environment from harmful effects, including the condition of purification and processing equipment, and their compliance with the legislation of the Russian Federation, measures to identify previous and existing environmentally significant problems provided by environmental legislation.

Scientific literature also uses the term "environmental auditing" which is synonymous to environmental audit.

Environmental audit in addition to its certification purposes is carried out in the course of privatization of state and municipal enterprises; while carrying out bankruptcy procedures; while providing compulsory environmental insurance; in preparing investment projects and programs, when it is specified by the terms of investment agreements.

Taking into account activities carried out within the framework of environmental audit, its content and purposes are being determined. In most cases, they include: assessment of the status of the company or individual entrepreneur in terms of environmental protection and rational use of natural resources and its compliance with the requirements of the legislation of the Russian Federation; identification of the environmental degradation of the enterprises premises, the activity of which is associated with harmful effects on the environment; identifying areas of environmental pollution, types and extent of contamination; identification and assessment of equipment and technologies related to environmental protection of the facility; assessment of the impact of the environment on the

health of workers; identification of additional environmentally relevant information about the object.

Environmental audit is the responsibility of the environmental auditor or environmental audit firms to implement an independent non-departmental expert analysis and evaluation of economic activities producing an impact on the environment, and to make recommendations to reduce the negative impact on the environment and human health.

The objects of environmental audit are economic and other activities, including the past related ones producing an impact on the environment, natural sites, as well as the results of such activities.

While conducting such an audit the extent to which the nature of a company's activities, products, management systems, etc. comply with environmental requirements, quantitative and qualitative indicators applicable on the territory of the Russian Federation is being inspected.

The subjects of consideration of environmental audit are: activities related to environmental protection, natural resources; condition of environment at the manufacturing facilities or natural site; Environmental Management System; compliance with environmental legislation and established environmental requirements; resource management; waste management; financial risks associated with the liability for violation of permissible exposure, etc.

The purpose of environmental auditing is to promote economic entities to define their environmental policy, establish priorities in implementation of environmental protection measures, as well as to create an effective mecha-

nism for implementation of environmental management and sustainable development.

The objectives of the environmental audit are: justification of the environmental strategy and policy of the company; determination of priorities in the planning of environmental activities of the enterprise, identification of additional opportunities for its implementation; verification of compliance with the business entity environmental legislation; improving the efficiency of the impact of regulation of an economic activity on the environment; reducing the risk of emergencies related to environmental pollution.

Environmental audit is carried out by individuals – auditors – experts with appropriate qualification certificate, and legal bodies – eco auditing firms with a staff of environmental auditors and having a permit (license) for carrying out this type of activity given by a competent authority.

Environmental audit of environmental management systems can be internal and/or external. In the case of the internal audit the company's management appoints responsible experts from the staff to form an audit "team", which may also include experts from outside. In the case of an external audit is a contract with a specialized audit firm or professionals who have a license for this type of activity and forming the audit "team", in which they may include representatives of the company. In any case, experts carrying out environmental audits should be qualified, impartial and objective.

To evaluate the effectiveness of systems of industrial environmental control and management, one can use the following procedure developed to meet the requirements and recommendations of the ISO 14001. The procedure involves the following steps: assessment of compliance with environmental legislation of the Russian Federation; conformity assessment of general formal requirements of ISO 14001 standard (GOST R ISO 14000); qualitative assessment of compliance with the advanced requirements of ISO 14001 (GOST R ISO 14000); assessment of the dynamics of changes in the basic quantitative indicators of environmental performance of the enterprise; qualitative evaluation of the company in the field of environmental management and management.

Evaluating the effectiveness of industrial environmental control and management at its the first stage can be formal and carried out in a number of ways: confirmation received from all state regulating bodies that activities of this company comply with the requirements of the legislation; obtaining general conclusions about the performance of the state environmental requirements.

Confirmation of compliance with all legal requirements

can be carried out by contradiction, i.e., by obtaining relevant data specifying: absence of over-limit discharges and emissions, proper storage of waste on-site; availability of the necessary documentation on the effects on the environment; all necessary licenses for complex environmental resources management, the availability of permits for emissions and discharges of pollutants; availability of certificates of payments, the availability of developed and approved documents such as, for example, projects of specifications of maximum permissible emissions and discharges, projects of waste disposal limits, etc.; good order on the industrial site. If fulfillment of the requirements of environmental legislation is confirmed by one of the above-mentioned methods, the first stage of evaluating the effectiveness of the environmental management system results in a positive conclusion. The second stage estimates the compliance of the activities of the enterprise in the field of environmental management with the formal requirements of the ISO 14001 standard, such as: availability of environmental policy which is communicated to the public and community; availability of environmental objectives and targets; availability of environmental management system guidelines and programs; clear allocation of responsibilities between staff, including training; conducting pre-audit (survey) to identify the environmental aspects of the current activities of the enterprise; maintaining relevant documentation; implementation of a systematic audit to confirm that the environmental management system efficiency. After having received positive answers to all these questions, a final positive opinion on the second stage of evaluation is given. In the third stage the conformity assessment of the system of environmental governance and management at the enterprise to the expanded requirements of ISO 14001 in the following areas is conducted: environmental policy and planning in the field of environmental management; organization of activities in the field of environmental management; evaluation and consistent improvement of activities in the field of environmental management.

The following type of questionnaires is used for assessment:

Scope of assessment	Assessment criteria	ISO 14001 requirements	Current situation
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It is necessary to consistently respond to all questionnaires. If the actual situation within the company complies with requirements of ISO 14001, a final positive opinion on the third stage of the assessment is made. At the fourth stage of evaluation, a variety of quantitative criteria and indicators is used, both are already applied ones and the ones proposed as a part of the audit program. It is important to show the dynamics of the indicators at least the last 3 years. The basis of assessment in the analysis of dynamics

of quantitative indicators uses the principle of continuous improvement in the analyzed period. The environmental management system in the company is considered to be quite effective (assuming that it meets all these requirements and criteria), if the trend for continuous improvement is confirmed by all aspects of the environmental performance of the enterprise, wherever it is virtually attainable. At the last fifth stage, qualitative evaluation of diverse, mainly self-motivated activity an enterprise in the field of environmental management is carried out, including the intention to implement this type of activity and intermediate results obtained.

The basic principles to ensure the effectiveness of environmental audit can be divided into: professional and ethical (1) and methodological (2) ones:

1) objectivity of environmental auditors: independence from the management of the audited facility, the customer, as well as from the management of the organization conducting the audit; competence in matters of environmental protection and environmental management, as well as the specific features of the audited facility, which is confirmed by relevant documents; maintaining the confidentiality of received information in the audit process, its non-disclosure; responsibility for the environmental audit within the limits set by the legislation of the Russian Federation or the framework contract;

2) planning the audit procedure: appropriateness of the choice of methods and technologies of the audit; defining the criteria for materiality and reliability; analysis of information and drawing conclusions; interaction of auditors; informing top-management of the audited companies on the results, etc.

Tri-lateral approach for conducting environmental audit at an industrial enterprise (from the viewpoint of technologies, compliance with laws, regulations and rules, as well as environmental and economic efficiency of the system of industrial enterprise) reveals not only the shortcomings in current activities, but also allows to identify the possibility of using innovative approaches in the field of technologies used in the company and receive timely and professional assess-

ment of the effectiveness of current activities of industrial enterprise in comparison with its competitors and to decide on the development of innovative strategy of improving economic, environmental and technological safety.

As part of the environmental control in industrial enterprises a need to implement public and corporate support in the field of training and retraining of managerial staff becomes obvious [10]. Therefore, we suggest: attracting attention of the community to management decisions of business leaders, which are associated with environmental impacts; strengthening measures of responsibility of managerial staff for their decisions resulting in pollution; shaping public opinion and environmental awareness, promoting retraining and advanced training of managerial staff and specialists responsible for environmental safety of the enterprise; involving the business community to the issues of informing about changes in legislation in the field of environmental protection, rational environmental management and sustainable development; publishing special literature on the problems of ensuring training and retraining of administrative personnel responsible for decision-making in the field of environmental protection; ensuring transparency while making management decisions on environmental safety.

Summarizing, we can draw the following conclusions. Managing environmental safety in order to preserve environment is an important activity aspect of Russian industrial enterprises. Therefore, in terms of innovative development, industrial enterprises should take environmental responsibility for the negative impact of industrial activity. The social and ethical nature of environmental safety management lies in harmonizing interests of producers, consumers, communities and environment. For effective management problem solving we require control of production activities within the framework of compliance with environmental legislation, involvement of all departments in running the initiative of environmental activities and formation of a new resource management system of values, including environmental values. In the process of environmental safety management one should also take into account all the environmental aspects of an industrial enterprise for developing an innovative, energy-efficient, competitive and environmentally friendly production.

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