

## **Improving the Methodology for Calculating the Cost of Production of Environmentally Friendly Products**

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### ***Abstract***

*This article discusses the importance and content of cost accounting for ensuring environmental quality of products. On the basis of the conducted research of practice, it is established that there are no methodological recommendations for accounting for the costs of quality of enterprises and the need for its formulation is scientifically justified. The definitions of scientists-economists on accounting for the costs of quality assurance are investigated. Proposals and recommendations on the procedure for accounting for the costs of producing environmentally friendly products have been developed. The study scientifically proved that the calculation of the cost of ensuring the quality of the environment, taking into account the complexity, is high, but its use will lead to the fact that the accounting system will have more information. It is also explained in detail that the determination of the cost of ensuring the environmental quality of products allows the management staff to make adjustments to the activities of the enterprise in order to increase its profitability.*

**Keywords:** *ecology accounting, environmental quality assurance, compliance of products, quality costs, organic production, environmental quality, environmental activities, environmental factors, natural product, environmental costs, environmental quality raw materials, environmental marking, mandatory environmental costs, environmental safety, genetically modified organisms.*

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**Introduction.** The problems of developing a theory of taking into account the environmental quality of products are related to the formation of the terminological apparatus and the peculiarities of the interpretation of new concepts by different groups of users. Today, there is still no single interpretation of the concept of “taking into account the cost of ensuring the environmental quality of products”. In addition, the concept of environmental accounting in the context of economic security of enterprises is not sufficiently developed.

Today, local enterprises do not keep records of environmental activities, which allow them to provide managers with information on the costs of ensuring the environmental quality of products.

This problem can be solved using 2 approaches:

1. clarification of the concept of accounting by more detailed and stratified reflection of environmental aspects of the enterprise and the costs of ensuring the environmental quality of products in the balance sheet of the enterprise;
2. making changes and improvements to the environmental reporting part of the environmental calculation in order to fully reflect (in terms of time) the costs of ensuring the environmental quality of products based on the results of production activities.

The reasons for the need to take into account the costs of ensuring the environmental quality of products include the followings:

- ✓ first of all, the significant negative impact of the activities of enterprises on the environmental situation in the country;
- ✓ deterioration of product quality and negative impact on consumer health;
- ✓ the formation of new requirements for users of information on environmental issues.

Accounting has the property of reflecting the current performance of economic processes, that is, it does not separately reflect information about the environment. Therefore, it is very difficult to clearly define the efficiency of the enterprise and its environmental performance. Lack of environmental accounting data creates problems for users of enterprise data and creates certain difficulties in planning the future production activities of the business entity. As a result, the cost of ensuring the environmental quality of products is not reflected in the accounts.

### **Analysis of the relevant literature**

When reflecting the environmental aspects of the financial and economic activities of enterprises in a stratified manner, it is possible to record the costs of ensuring the environmental quality of products and provide information about them. The data obtained can be used to form internal management reports and in interactions with external investors.

Another approach involves reorganizing and expanding accounting to use it as an environmental management tool. The modern accounting system in Uzbekistan is not adapted to these purposes. Also, today there is no single interpretation of the ecological quality of products and its goals and objectives.

Practice shows that the cost of “Quality” is not calculated for the calculation of the cost of the finished product, as enterprises do not have methodological guidelines for calculating quality costs. In addition, the chart of accounts does not provide for a separate account to reflect the costs of environmental quality assurance. Some researchers have tried to solve this problem. We

consider it expedient to consider their proposals for the composition and calculation of product quality costs below.

As N.A. Morozova-Gerasimovich states, in practice it is advisable to use the procedure for calculating the cost of quality assurance. According to him, as in the case of other complex costs, such as general production costs, it is necessary to open a separate collection account “Quality Assurance Costs” in the chart of accounts and two sub-accounts: “Costs to ensure quality” and “Losses from non-conformity of products” [1].

I.Yu Timrienko proposed to take into account the total cost of improving product quality in 23 “Production” accounts. In the economically justified methodology of quality cost accounting, the accounts in which these costs are accounted for play an important role. Hence, I.Yu. Timrienko proposed a structure such as a 231 XXXX YY quality expense account. According to it:

the first three characters are the account number in accordance with the chart (231 – “Production”);

the next four characters are given on the basis of the State Classifier of XXXX – products and services.

the last two characters – YY –are from the classification of “item of quality costs” (these costs are included in the cost of production as part of other costs) [2].

In her research, T.D. Popova suggested using a separate collection and distribution “Quality Costs” account to ensure that the chart of accounts takes into account the quality cost system. Its debit reflects all costs related to quality during the month, and at the end of the month, it is deducted from its credit to the accounts “Main production”, “General production costs”, “General production costs”, “Disposable products in production”, “Deferred expenses” and others [3].

According to V.M. Parkhomenko, it is not advisable to account for quality costs in separate collection and distribution accounts. Because it only leads to an increase in the number of synthetic accounts and an increase in the volume of accounting work. As the scientist said, the best way to do this is to keep an analytical account in the cost account in the section “Quality costs” (accounts 20/TTX, 23, 24, 26, 91, 92, 93, 94) [4].

As can be seen from the above, the proposals of economists related to the reflection of quality costs in accounting can be grouped into three groups:

1. Maintaining a separate account (N.A. Morozova-Gerasimovich [1], T.D. Popova [3]).
2. Opening a separate sub-account “Costs associated with improving product quality” on the account “Main production” (I.Yu. Timrienko [2]).
3. Maintaining analytical accounting on the expense chart (accounts 20/TTX, 23, 24, 26, 91, 92, 93, 94) (A.V. Fomina [5], V.M. Parkhomenko [4]).

### **Research methodology**

This article uses the methods of scientific abstraction, expert evaluation, induction and deduction, comparison, systematic analysis.

### **Analysis and results**

As a result of the study of the problems of accounting for the environmental quality of products,

the objects of accounting were identified: such as environmentally friendly products and the cost of ensuring the environmental quality of products.

Lack of information on the costs of ensuring the environmental quality of products creates problems for users of information about the enterprise and creates difficulties in planning the future production activities of the business entity. Accounting is the main source of information about the costs of ensuring the environmental quality of products. Formation of a number of problematic issues related to the development of organic production by local enterprises to ensure the environmental quality of products and a comprehensive accounting of its application costs, primarily to address legal issues, in particular to complete the development of an appropriate regulatory framework for organic production It addresses the issue of integration as much as possible to EU standards and requirements.

Objectives of accounting for the costs of ensuring the environmental quality of products: the objects of environmental quality accounting, in particular, the cost of effective management of genetically modified organisms, industrial waste and environmental activities of the enterprise; ensuring the integrity of natural resources; ensuring control over the costs of the enterprise related to environmental activities; We believe that the formation and provision of complete, timely and reliable information on the assessment of the impact of environmental factors on the financial results of the enterprise.

The main issue in the production of environmentally friendly high-quality products (raw materials) is the absence of chemical fertilizers and synthetic pesticides, genetically modified organisms, products made from genetically modified organisms and preservatives.

Given the low environmental quality of products, new approaches to managing genetically modified organic assets and environmental quality assurance costs need to be developed. Indeed, effective management leads to the successful operation of business entities in a market economy.

Environmental product quality management is a set of consistent actions by management to determine the costs of ensuring the environmental quality of products and the actual state of genetically modified products based on the registration and processing of information on the purchase, production and sale of quality raw materials.

To ensure the environmental safety of food products, it is necessary to reconsider the approaches to their production. In this regard, the importance of accounting as an effective means of reliably reflecting the costs associated with the information system of the enterprise and the processes associated with genetically modified organisms, as well as ensuring the environmental quality of products.

One of the conditions for the production of environmentally high quality products is the formation of a system of accounting and analytical support of the costs of ensuring the environmental quality of products and products containing genetically modified organisms at the micro level. This places new demands on the accounting system of enterprises at the micro level. Therefore, it is necessary to formulate a conceptual approach to the cost of reflecting products containing genetically modified organisms and ensuring the environmental quality of products.

The organization of accounting for the costs of genetically modified organisms and environmental quality means a set of measures to organize the collection, processing, storage of information about products and costs, as well as the provision of necessary information to different groups of users. The process of organizing the accounting of the cost of ensuring the

environmental quality of products is divided into three stages: the purchase, production and sale of raw materials. Accordingly, environmental quality costs, quality assurance, and improvement can occur at each of these stages. However, it is also important that the costs incurred before the start of the business and affect the environmental quality of the products, ie the costs associated with the preparation for the operation, are allocated to a separate cost. Such costs include the cost of information services, the cost of marketing research, the cost of obtaining codes, the cost of product certification, the cost of developing and evaluating the cost of a quality system, the cost of training, and so on.

Environmental costs of production – economic, environmental and other consequences arising from the reproduction and efficient use of natural resources, prevention and elimination of pollution, maintaining and improving the quality of the natural environment, as well as existing environmental pollution and inefficient use of natural resources. is the sum of the future costs associated with overcoming the negative social consequences. Depending on the recognition by government agencies, environmental costs are divided into mandatory environmental costs and socially unrecognized costs.

It is advisable to keep an account of the costs of production of environmentally friendly food products in the analytical account 2000, which is opened by the types of products that are usually produced in enterprises. We believe that an analytical division based on the nature of genetically modified organisms in the composition of manufactured products should be mandatory. For example, 2011 – “Production without genetically modified organisms”– accounting for environmentally friendly products, and 2012 –“Production using genetically modified organisms”– accounting for products containing genetically modified organisms. Such analytics should be applied to every production synthetic account.

Accordingly, direct costs are recorded in the 2010 “Main production” account, indirect costs –in the 2500 – “General production costs” account, which are periodically deducted from the 2010 “Main production” account and distributed among the objects of the cost account.

Calculating environmentally friendly products: 2011 –“Production without genetically modified organisms”; 1011–“Ecologically high quality raw materials”, 2811–“Ecologically high quality finished products”; 6011–“Settlements with local suppliers of ecologically high quality products”, 6711–“Calculations on salaries of employees engaged in production of ecologically high quality products”, 6511–“Calculations on compulsory state social insurance of employees engaged in the production of environmentally friendly high quality products”, 0201– “Depreciation of fixed assets for environmental purposes”, 0101– “Machinery and equipment of environmental importance”, 0821– “Purchase of fixed assets for environmental protection (production)”, 9111– “Cost of sold ecologically high quality finished products”, 9011– “Income from sale of ecologically high quality finished products”, 9111– “Financial result from sale of ecologically high quality finished products” account is similar to the above scheme using analytical accounts in order.

Enterprises incur additional costs for the production of environmentally friendly products (Table 1).

**Table 1** Accounting for production costs of environmentally friendly products \*

<i>Stages of economic activity</i>	<i>Cost structure</i>	<i>Accounts</i>
Preparation	- marketing research costs;	2511
	- product certification costs;	2512
	- costs of metrological support of production and assessment of ecological quality;	2513
Supply	- salary costs of employees engaged in recording and determining the quality of purchased raw materials;	2514
	- salary calculation;	2515
	- additional costs for checking the conformity of raw materials;	2516
	- transportation costs of high quality raw materials	2517
Production	- costs associated with training in the field of quality;	2011
	- cost of quality assurance of samples;	2012
	- travel expenses related to staff training;	2013
	- costs of product testing	2518
Selling	- the cost of providing consumers with evidence of compliance with the established requirements;	2011
	- costs associated with the promotion of environmentally friendly products	2012

Source. [6]

Table 1 shows a description of the costs of ensuring the environmental quality of the product, which can be used as a basis for creating a chart of accounts in enterprises.

In particular, it will be possible to obtain information on genetically modified organisms from the primary documents for the acceptance of raw materials for production, which must be confirmed by the attached conclusion of the laboratory work on genetically modified organisms. On the basis of primary documents, information on genetically modified organisms in the raw material is reflected in the accounts of the accounting system (1011, 1031 and other sub-accounts in the analytical context related to the presence/absence of genetically modified organisms). After that, the raw material is transferred from the account: 2011– “Production without genetically modified organisms” (assuming the account of environmentally friendly products), 2012–“Production using genetically modified organisms” to the production account. Taking into account data on production costs, finished products are also taken into account in the analytical context of the composition of genetically modified organisms in 2800 accounts.

To ensure that enterprises operate on the principles of sustainable development, the necessary conditions must be created for the full and comprehensive use of environmentally friendly high-quality raw materials in the production process. Accounting is one such tool as a system that provides information about the material costs incurred by the enterprise in the processing processes. Thus, according to the developed proposals, information on genetically modified organisms in the raw material is reflected in the accounting (in the analytical section on the presence / absence of genetically modified organisms in 1011–“Environmentally quality raw materials and materials” and other sub-accounts). Then, the raw material is transferred to

production, and this economic process is reflected in the accounts 2011–“Production of products without genetically modified organisms” (assuming the account of environmentally friendly products), 2012– “Production of products using genetically modified organisms”. On the basis of production data, the finished products are also credited to the account 2800 – “Accounts for finished products” in the analytical section on the composition of genetically modified organisms.

In order to prevent the concealment or misrepresentation of the composition and characteristics of goods, ie certain components, it is necessary to control the environmental quality of products and the provision of reliable information when marking products.

Therefore, environmental marking is an important tool in achieving a reduction in the negative impact on consumer health and the environment. The reliability of environmental marking can be ensured by using elements of accounting methods, because it is in the accounting system that information about the actual composition of products is formed.

### **Conclusions and suggestions**

Accounting is one of the elements of business management of the enterprise, because the accounting data describe the state of the property and the sources of its formation. In addition, accounting data is a source of control over the quantity and value of genetically modified organic products, as well as the cost of producing environmentally friendly products.

There is a need to revise the organizational and methodological rules of accounting, which will ensure the quality and completeness of accounting information and will be the basis for the development of accounting for environmental quality management of enterprises based on the principles of rational use of resources.

Mandatory environmental costs are a mandatory part of total environmental costs at the current level of scientific and technological progress. Accordingly, this type of production environmental costs should be an integral part of the cost and price of the product. Socially unrecognized environmental costs are associated with over-consumption of natural resources and excessive pollution of the environment. These environmental costs are not included in the cost of the product as they are the result of improper economic activities. They must be covered by the profit remaining after taxes have been paid.

Thus, the labor capacity of the mechanism for calculating the cost of environmental quality assurance will be higher, but its use will lead to more information in the accounting system. Determining the amount of costs to ensure the environmental quality of products allows management to make adjustments to the activities of the enterprise in order to increase its profitability.

Due to the fact that the production of environmentally friendly products requires additional costs, the price of these products will be more expensive than other products. That is, in addition to the basic production costs provided for in traditional production technologies, the cost of product quality assurance should be economically justified and offset by the additional demand for quality products. At the same time, in order to achieve quality indicators with revenue from the sale of environmentally friendly products, it is necessary to determine and achieve the optimal level of costs to be achieved when the difference between the costs incurred is maximal.

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