Practice of Use of Professional Standard While Developing Program of Professional Retraining on Ecological Safety

S K Belyakin, N K Smirnova, V A Krivobokova
Kurgan state university, 640002, Kurgan, 62Proletarskaya street, Russian Federation

E-mail: bgd@kgsu.ru

Abstract. the article considers the practice of the use of the professional standard “Specialist on ecological safety (in industry)” while realizing professional retraining of specialists and organizations on ecological safety. On the basis of this standard the program of professional retraining is developed. The curriculum and the fund of rating means are given. The material may be interesting for the people, providing professional training, retraining of specialists on ecological safety.

Introduction

In the 21 century local and global ecological problems are becoming sharper and sharper due to the increase of the influence of human economic activities on the environment. The growth of human pressure on the environment leads to reserve depletion of natural resources, loss of natural connection between the man and the nature, decline of inartificial values, and as a consequence, deterioration of moral and physical health of people.

The necessity of providing ecological safety, while modernizing economy and in the process of innovative development, conditions the elaboration of Cornerstones of state policy in the sphere of ecological development of the Russian Federation for the period to 2030, in which it is stated that in 40 constituent territories of the Russian Federation more than 54 per cent of the urban population is under the impact of high and very high level of atmospheric air pollution. The volume of aqueous wastes, discharging into surface water bodies without purification or without proper purification, remains high. Practically in all the regions the tendency of deterioration of land and soil state holds. The processes, leading to the exhaustion of cultivated lands and their removal out of economic turnover, are developing intensively. Desert advancing is going on at this or that degree in 27 constituent territories of the Russian Federation on the square of more than 100 mln hectares. The quantity of wastes, which is not recycled, but is sent to landfill sites, is increasing. Moreover, the conditions of waste storage and landfilling fail to meet the requirements of ecological safety [1].

The solution of problems of environment protection depends on ecological mindset of broad population and the qualification of specialist-ecologists a lot.

The state policy is defined as an array of economic, legal and organizational measures, aiming at maintaining the environment ability to satisfy the needs of the existing and not to threaten the satisfaction of needs of the future generations [1, 2, 3], and it is focused on the creation of favourable environment, improvement of living conditions and population health, guarantee of ecological safety. The important task of realization of the country policy in this sphere is the preparation of specialists of high qualification, they should manage ecological risks effectively, do the corresponding economic calculations, organize efficient policy in the sphere of environment protection.

Object of study

Professional standard is a characteristic of qualification, necessary for the worker to carry out a certain type of professional activity (paragraph 2 article 195.1 Labour code of RF) [4]. This notion of professional standard was introduced into the Labour code at the end of 2012, because the characteristics of positions, included into Unique qualification references, did not correspond the modern situation at the labour market.
The decree of the Ministry of labour and social security of the Russian Federation [5] ratified the professional standard “Specialist on ecological safety (in industry)”, which set up claims to the education and training, experience of practical work and special conditions of the specialist admission. It presents the functional map of the type of the professional activity and the main general cultural and professional competences of the graduates.

Results and their discussion

Nowadays in Kurgan state university scientific-educational center “Ecology, labour protection and life safety” of the department “Ecology and life safety” realizes additional educational program of professional retraining “Ecological safety (in industry)”. This program implies lectures and practical classes, consulting in the process of teaching and preparing for final assessment, unsupervised work of listeners, training on probation, conducting intermediate and final assessment.

The program of professional retraining is developed in accordance with laws and regulations:

- Federal Law of the Russian Federation dated 29 December 2012 № 273-FL “Of education in the Russian Federation” [6];
- Order of organization and realization of educational activity on additional professional programs, ratified by decree of Ministry of education and science of the Russian Federation dated 1 July 2013 № 499 [7];
- Decision of Ministry of labour of the Russian Federation dated 21 August 1998 r. № 37 “Of the statement of Qualification reference of positions of managers, specialists and other staff (with changes on 27 March 2018)” [8];
- Federal state educational standard of higher education in the field of study 20.03.01 “Technosphere safety” (bachelor degree level), ratified by decree of Ministry of education and science of the Russian Federation dated 21 March 2016 № 246 [9];
- Professional standard “Specialist on ecological safety (in industry)”, ratified by of Ministry of labour and social security of the Russian Federation dated 31 October 2016 № 591п [5].

The aim of the realization of professional retraining program is listeners’ formation of professional competences, necessary to provide the organizations of industry segments with environment protection activity with the purpose of development of the complex of organizational and technical measures, directing to ecological safety, minimization of the negative effect of economic activity in industry on the environment.

The sphere of professional activity is throughout professional activity in the industry in the sphere of providing environment protection activity.

Professional standard [4] gives detailed characteristics of generalized labour functions, possible names of positions, requirements to education and training, as well as to the experience of practical work, which have become the bases of program of professional retraining in the Kurgan state university. The description of labour functions, included into professional standard (functional map of the type of the professional activity), is presented in 1.

According to the names of generalized labour functions of a specialist on ecological safety, it seems reasonable to master the following professional competences (PC):

- PC-1 – ability to carry out control of meeting requirements in the sphere of environment protection;
- PC-2 – ability to develop activities on environment protection and provision of ecological safety and paperwork in accordance with stated requirements;
- PC-3 – ability to develop activities on economic regulation and personnel staff management in the sphere of environment protection.
Table 1 - Functional map of the type of the professional activity

| Generalized labour functions | Name of labour function |
|-----------------------------|-------------------------|
| Code | Name | Qualification level | |
| A | Realization of control of requirements fulfillment in sphere of environment protection | Control of adherence of technological regimes of environment protection objects of organization, analysis of their work, control of normative state of environment in the area of organization location |
| | | Preparation of necessary materials for carrying out production ecological control |
| | | Performance of technical tests of equipment, providing ecological safety of enterprise, and determination of efficiency of equipment work |
| | | Control of waste accumulation, utilization, neutralization and emplacement in organization |
| B | Development of activities in organization on environment protection and provision of ecological safety and paperwork in accordance with stated requirements | Performance of ecological analysis, involving enlargement and reconstruction of existing productions, as well as new technologies and equipment |
| | | Performance of work on production of new goods with improved ecological characteristics |
| | | Performance of production ecological control and paperwork of event fulfillment of activities on environment protection |
| | | Record keeping of values, characterizing environment state, of data of ecological monitoring and other paperwork |
| | | Ecological paperwork preparation in accordance with stated requirements in the sphere of environment protection and provision of its up-to-date reconsideration |
| | | Development and introduction of activities, aiming at meeting requirements in the sphere of environment protection, prevention of occurrence of emergency situations of natural and technogenic character |
| C | Development of activities in organization on economic regulation and personnel staff management in sphere of environment protection | Development and economic justification of plans of introducing new equipment and technologies, providing minimization of organization impact on environment |
| | | Development of activities on economic regulation of environment protection measures of organization |
| | | Fulfillment of justified calculations of ecological risks with the view of foreseeing of impact of business activity of organization on environment |
| | | Organization of organization of reasons and consequences of wastes and interception of harmful substances, preparation of offers on prevention negative consequences |
| | | Managing personnel staff of organization department on providing ecological safety |

The program of professional retraining, realizing at the Kurgan state university, provides the achievement of the seventh level of qualification in accordance with the requirements of professional standard [4]. The accomplishing of this program of professional retraining will allow fulfilling labour functions and taking corresponding positions (table 2).
People, having and/or getting secondary technical and/or higher education, can be admitted to master the additional educational program of professional retraining, as well as acting specialists: technicians-environmental experts, technicians–laboratory assistants, technicians of department of ecological safety, engineers on ecological safety, engineers on environment protection, engineers - laboratory assistants, specialists in the sphere of environment protection, chiefs of the department of environment protection, chiefs of the department of ecological safety, group leaders (in industry).

Credit value of study comprises 540 academic hours with the account of all kinds of in-class and unsupervised work of the listener. The form of study is part-time. It is possible to realize the program of profession retraining in a distance-type form of education. The study runs for 4 months; 13 academic weeks. 5 weeks is given to fulfill final assessment work.

In table 3 the curriculum of the additional educational program of professional retraining «Ecological safety (in industry)» is presented.

Table 2 – Positions, corresponding to qualification levels

| Qualification level | Names of possible positions |
|---------------------|----------------------------|
| 5                   | Technician-environmental expert  
|                     | Technician–laboratory assistant  
|                     | Technician of department of ecological safety |
| 6                   | Engineer on ecological safety  
|                     | Engineer on environment protection  
|                     | Engineer - laboratory assistant  
|                     | Specialist in the sphere of environment protection |
| 7                   | Chief of the department of environment protection  
|                     | Chief of the department of ecological safety  
|                     | Group leader (in industry) |

Table 3 - Curriculum of the additional educational program of professional retraining «Ecological safety (in industry)»

| Names of subjects (courses) | Total number of hours | In-class | Unsupervised work | Form of control |
|-----------------------------|-----------------------|----------|-------------------|-----------------|
|                             |                       | Lectures | Practical classes |                 |
| Legal regulation of ecological safety | 36                | 6       | 6                 | 60              | graded test     |
| Ecological requirements to organization of technological processes and production equipment | 72                | 6       | 8                 | 58              | exam            |
| Resources of environment pollution | 72                 | 8       | 10                | 54              | exam            |
| Engineering protection of environment | 36                 | 2       | 4                 | 30              | Graded test     |
| Ecological standardization and audit | 36                 | 4       | 8                 | 24              | graded test     |
| Rational use of natural resources | 36                 | 4       | 6                 | 26              | graded test     |
| Ecological management | 36                 | 6       | 2                 | 28              | test            |
| Ecological risks | 36                 | 4       | 4                 | 28              | test            |
| Ecological control at the enterprise | 72                 | 6       | 4                 | 26              | exam            |
| Ecological recording and paperwork | 72                 | 10      | 12                | 50              | exam            |
| Work on probation |                       |         |                   |                 | Test            |
| Final assessment (final project) | 36                 |         | 36                | Defence of final project |
| All in all: | 540                | 56      | 64                | 420             | Exam - 5 Test - 6 |

Each discipline of program of professional retraining involves performance of practical work in accordance with methodical instructions; there is a fund of rating means for listeners’ assessment. In working programs of subjects (courses) there are particular professional competences in accordance
with labour functions, as well as knowledge, skills and know-how, which will be mastered by listeners in the process of learning study materials. For example, as a result of mastering the discipline “Legal regulation of ecological safety”, the educated should demonstrate the following results of study.

To know:
- ecological legislation of the Russian Federation, basic normative legal acts in the sphere of environment protection;
- production and organization structure of enterprise and possibilities of its development;
- normative and methodical materials on environment protection and ecological safety provision;
- order of keeping paperwork on environment protection and ecological safety provision.

To be able:
- record information of results of production ecological control;
- conduct account of values, characterizing environment state in accordance with requirements of normative legal acts in the sphere of environment protection;
- take into account the specific character of the organization while developing ecological paperwork;
- interact with authorized bodies of executive power in constituent territories of the Russian Federation on elaboration of ecological paperwork.

To master:
- methods of analysis of the basic directions of ecological safety improvement with the consideration of the specific character of the production.

Below there are pattern tests on some subjects.

Variant of the test on the discipline “Legal regulation of ecological safety”

1 The subject matter of the ecological law is:
   a) social relations in the sphere of protection, recovery and improvement of environment, prevention and disposal of negative consequences of impact of business and other activities on environment;
   b) social relations in the sphere of interaction between the man and the nature;
   c) social relations in the sphere of environment protection against the impact of physical, chemical, biological and other values and (or) their combination.

2 The objects of environment protection from wasting, exhausting, degrading, spoiling, eliminating or other negative impacts of business or other activities are:
   a) lands, mineral resources, soils;
   b) surface and subterranean waters;
   c) forests and other vegetation, animals and other organisms and their genetic fund;
   d) atmospheric air, ozone layer of the atmosphere and near-Earth environment.

All variants are right.

3 Subject matters of ecological legal relations are:
   a) citizens, state bodies;
   b) individual persons, legal persons, state bodies;
   c) citizens, legal persons, state bodies;
   d) state bodies, officials, production enterprises.

4 Which does not belong to the resource of ecological law:
   a) Constitution of the RF,
   b) FL «Of environment protection»;
   c) LC RF;
   d) Aqueous and Forestry Codes.

5 Ecological crime is:
   a) negative change of environment as a result of its pollution, leading to degradation of natural ecological systems and exhaustion of natural resources;
   b) guilty wrongful act, breaking environmental regulation and doing harm to environment and human health.

Listeners are admitted to the final assessment after passing all intermediate assessments.

The final assessment of the trainees of the additional educational program of professional retraining “Ecological safety (in industry)” involves the defence of final project. Each listener has a tutor to assist while solving main, principal questions [10,11].

The topic of the final project is set by the department, preparing specialists in the field of study 20.03.01 “Technosphere safety”. The listener has the right to offer (in agreement with the tutor) his own
topic, which is essential for the organization, where he works now, he works on probation and where he is going to work in future, or which is appealing to his production or scientific interests.

At the defence of final project the readiness of the listener to perform professional functions, included into the professional standard, is checked; practical experience is assessed; as well as the ability to give reliable reasons and to prove performed research and developed solutions in the process of discussion. The final assessment is done by the final attestation commission, the composition of which is formed by the department of Ecology and life safety, signed by the rector. Considering the results the commission makes a decision of passing/failing final assessment.

According to results of successful passing the program:
- the listener of the courses will possess the competences, necessary for realization of his professional activity in the sphere of provision of ecological safety activity in the organizations of production segments;
- the listener, who has finished the educational program successfully, has got the right to perform new kind of professional activity in the sphere of provision of ecological safety activity in the organizations of production segments;
- the listener, who has finished the educational program successfully and satisfies the requirements of the Professional standard from the point of view of education (higher education – specialist, master’s degree program) and experience of practical work (no less than five years in his specialization at leading positions in the sphere of ecological safety) has got the qualification “Specialist on ecological safety (in industry)” (the 7th level of qualification).

The listeners of the first group in 2017, mastering the program of professional retraining and passing final assessment successfully, got the diploma of professional retraining, giving the right for professional activity in the sphere of ecological safety. Nowadays many listeners (having experience of work in the sphere of provision of ecological safety) undergo distant form of education.

Conclusion

The necessity of development of the program “Specialist on ecological safety (in industry)” is conditioned by modern requirements of state policy in the sphere of environment protection. In accordance with the professional standard and unique qualification reference of positions of managers, specialists and employees [4,8] specialists, carrying out work in the sphere of ecological safety must have professional education corresponding to his training directions (specialization). If the specialist on ecological safety has no specific education, he has to get additional professional education on the programs of professional retraining. Otherwise, the worker has no right to take a post in ecological services of enterprises and organizations and must be dismissed. In connection with the fact that the mentioned decree has entered into force, enterprises and organization of the Kurgan region feel the critical need for professional retraining of the specialists of this direction.

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