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To cite this article: Yu D Pristupa *et al* 2021 *IOP Conf. Ser.: Earth Environ. Sci.* **823** 012035

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Human resources and health and safety management in the production environment of a loading and transport enterprise

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Abstract. The directions for the improvement of the level of labor protection through personnel management in the process of recruitment, the development of competence and the preservation of the health of workers are substantiated. Using the example of loading and transport enterprise activities, the role of a person as a guarantor of the improvement of a complex organizational and production system safety is determined.

1. Introduction

In a turbulent economy, due to the periodic behavior of sales markets development, the impact of sanctions, as well as natural and social unpredictable events, the sustainability of the development of complex organizational and production systems is provided by internal resources, including the competencies of personnel, as a guarantee of obtaining products in demand on the market in the safe working conditions [1].

One of the options for a complex organizational and production system is a loading and transport enterprise, the main logistics functions of which are storage of coal products coming from mining and processing enterprises, loading products and forming trains for transfer from non-public tracks to the transport system of Russian Railways.

To carry out these main processes at the loading and transport enterprise, auxiliary processes and operations are carried out related to the provision of loading operations, the transportation of empty and loaded trains, and the repair of non-public tracks, machinery and equipment. These processes are carried out by personnel, the competence of which depends not only on the quantity and quality of work performed, but also on the safety of employees.

To preserve the life and health of people, it is necessary to strictly comply with state legislative and regulatory requirements in the field of industrial safety and labor protection [2, 3], to build work taking into account the requirements of international standards and development goals of the enterprise.

At the same time, a complex task of providing a given amount of products arises while preserving the life and health of personnel. This problem is solved at the loading and transport enterprise LLC “United Production and Transport Department of Kuzbass” (LLC “UPTU of Kuzbass”) through the development of personnel in the following main areas: recruitment, creation of a personnel reserve, adaptation of employees to work collectives and production, involvement, motivation, development, awareness, increasing personal and communicative competencies, etc.

The main results of solving the complex problem of ensuring a given amount of products while preserving the life and health of personnel are set out in this paper.

2. Methods of research

Statistical analysis of the performance indicators of the loading and transport enterprise LLC "UPTU of Kuzbass", the dynamics of accidents and the health of workers.

3. Results and discussion

The loading and transport enterprise LLC "UPTU of Kuzbass" provides logistics operations for the storage, loading, transportation and transfer of coal products to consumers of coal products produced by the Siberian Coal Energy Company (SUEK).

In accordance with the developed concept of personnel development, the following principles are highlighted: recruiting using modern information approaches, managing labor and production discipline in accordance with the company's development strategy, using the Deming method in the company's personnel policy, rating selection of employees on a competitive basis, taking into account personal competencies, development of communicative competencies in the performance of labor functions in a team, ensuring maximum labor productivity while minimizing accidents and incidents, development of an enterprise while ensuring safe work [4-6].

The works on improving the personnel management system and occupational safety in the production environment of the loading and transport enterprise LLC "UPTU of Kuzbass" began simultaneously with the organization of SUEK. The first problem that had to be solved was the lack of young specialists who would be able to quickly solve problems related to the organization of modern production. The disunity of the team was felt.

To solve these problems, a non-standard solution was adopted and implemented: recruitment of personnel through interviews with the director of the enterprise [6]. In the process of a question-and-answer interview, a focus on the future and trust between the administration and the hired employee was formed (figure 1). At the end of the interview, the employee gave an oral, informed consent to comply with all the requirements and norms of the company. Thus, a general assessment of the candidate for admission was formed in terms of intellectual and professional level. After that, the applicant was handed a traditional package of documents for registration for work.

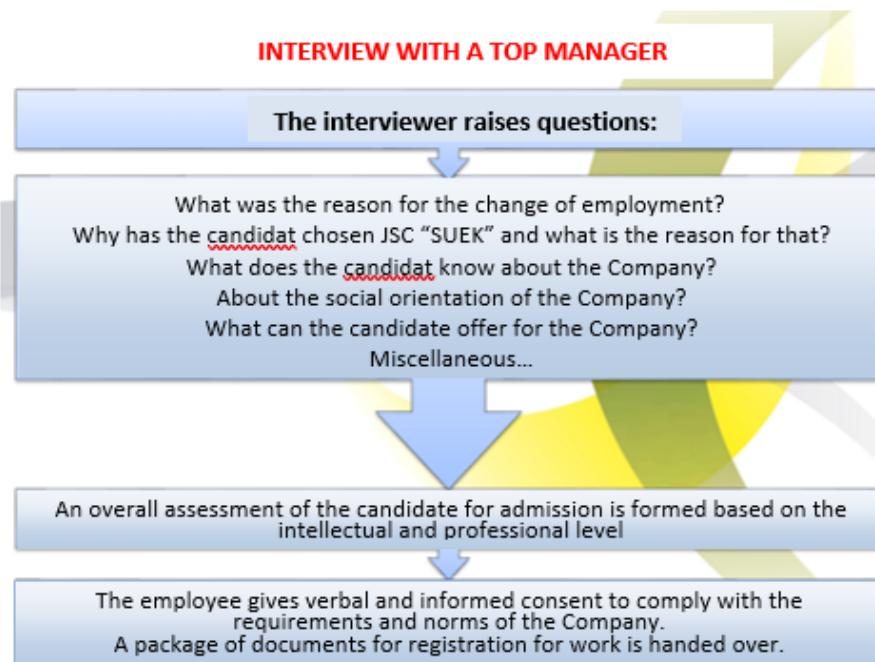


Figure 1. Scheme of recruiting the personnel by the top manager.

In the process of forming a system for increasing labor productivity with continuous production in a three-shift mode, specialists have identified contradictions between the interests of the enterprise and the personnel. Employees of the enterprise massively went on sick leave, there was a lack of workers in production for objective reasons with a fully staffed staff. A disproportion was created between personal and communicative competencies and employee preferences – in a certain production and organizational situation it was preferable for an employee to go on sick leave [7, 8]. To eliminate the current negative situation for the enterprise, personnel management schemes were developed, according to which it became unprofitable for an employee to go on a fictitious sick leave. A draft Regulation on the work of the medical-engineering commission was developed with the involvement of a wide range of the public. The Regulation enshrines the position of a socially oriented company that takes care of the health and well-being of every person working at the enterprise.

The Medical and Engineering Commission was empowered to consider personal participation or non-participation of the employee in the monthly calendar schedule of the production process and to make a decision on adjusting his bonus indicators. Two factors were taken into account in the decision of the commission:

- if a person leaves for a sick leave and cannot confirm what disease he was treated for, cannot tell the symptoms of the disease, tell what medical indications are prescribed, then the commission gets the impression that this person was not sick;
- each person leaving for a sick leave changes his schedule, the schedule of his colleagues changes because of it, when he returns to work, the schedule changes again, and one person can thus change the work schedule of others twice within a month, four to five workers who are conscientious, adequate, hardworking, but forced to obey the changed conditions, change their personal plans, plans for raising children, etc.

Thus, with the adopted Regulations on the Medical Engineering Commission, from January 2009 the trade union conference secured the administration's right to make decisions. The regulation came into force, numerous factors of unscrupulous receipt of sick leaves began to be identified, and within several years (figure 2) the incidence rate dropped very sharply.

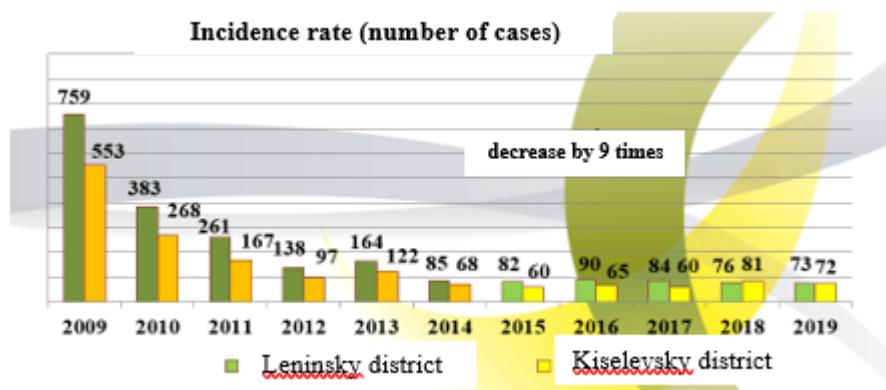


Figure 2. Dynamics of reduction of the incidence rate among personnel due to the reduction of fictitious sick leaves.

To improve the personnel management system and labor protection in the production environment of a loading and transport enterprise, a personnel policy has been developed according to the Deming principle, which is reflected in the form of a continuous circle of relationships for the formation of a personnel reserve, personnel involvement, motivation, awareness, development, adaptation and selection (figure 3).



Figure 3. Scheme of personnel recruiting by the top manager.

In the process of implementing the Deming principle, instead of an interview for a position with the first head, the company's specialists discuss the candidacy of the applicant in four stages: personnel service specialists, the head of the structural unit, the deputy general director for general issues, the general director during the interview and with the receipt of a business card in case of a positive decision on hiring. At all stages, modern information technologies are used to integrate information about the applicant, including the trajectory of his career growth in the organizational and production system of the enterprise.

It is obligatory to organize a competition of applicants for filling vacant positions in the amount of 2-4 people per place.

Cognitive modeling [9, 10], testing according to the Hogan version (by the levels of competence) are used as scientific support for the developed personnel policy.

Hogan is an international system that is quite effective and proven in many European and Asian labor markets. After testing all existing personnel, the average value for the enterprise was determined, and the indicator reached 47 out of 100 possible. It was decided that, in the further development of the personnel project, its improvement, to focus on the growth of competence according to Hogan and to recruit the most ready employees.

Thus, in the conditions of a limited territorial location of a production facility, through the implementation of a competency-based approach at the enterprise, within 6-7 years, personnel competence has increased by 21 percentile. Of particular satisfaction is the fact that among the newly hired employees the level of competence has increased to 66% (figure 4). The team was replenished with more adequate and competent employees, a team of like-minded people is purposefully formed, aimed at the final result.

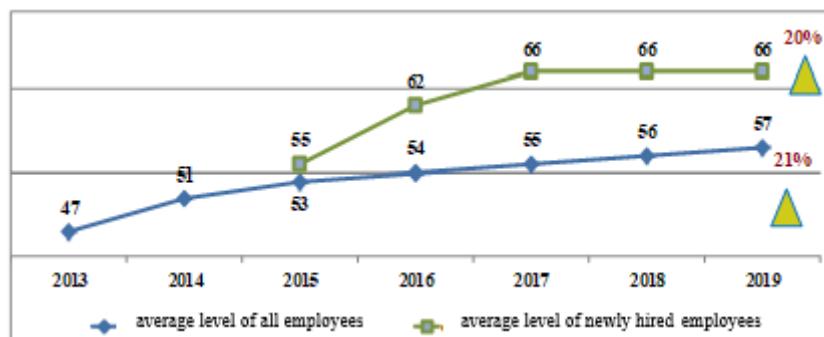


Figure 4. Scheme of personnel recruiting by the top manager.

It should be noted that the creation of a workable team is carried out with a reduction in the number. This leads not only to an increase in labor productivity, but also to an increase in the level of work safety.

Figure 5 shows a diagram showing two periods of change in the incident rate. The first stage until 2014 is characterized by the stochasticity of events, which indicates an insufficient level of personnel management and labor protection at the production environment of the loading and transport enterprise.

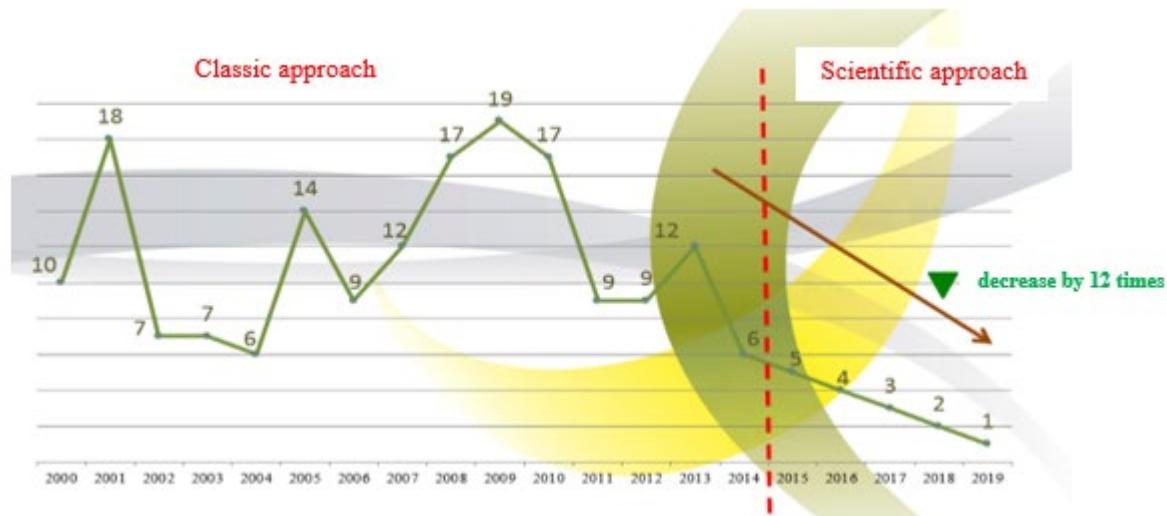


Figure 5. Scheme of personnel recruiting by the top manager.

According to the results of the analysis of traffic accidents at the first stage, it was established that the cause of the occurrence is the same – the human factor [9]. People could take a liberty not to fulfill some official duties, which led to large and serious consequences.

The second stage after 2014 to the present confirms the effectiveness of the implementation of the developed personnel policy. The level of traffic accidents is steadily decreasing, the consequences of their occurrence are decreasing, which means that the entire production cycle is strengthened.

It should be noted that injuries after the introduction of personnel policy into production reached zero.

The development and implementation of personnel policy is carried out in close cooperation with public organizations, the trade union movement, scientific and educational organizations. A positive factor in the availability of a human resource for a loading and transport enterprise is the participation

in the production process of students during their internships and specialists after graduation from universities.

4. Conclusion

Personnel development of complex organizational and production systems is recommended to be carried out in the following main areas: recruitment, creation of a personnel reserve, adaptation of employees to work collectives and production, involvement, motivation, development, awareness, increasing personal and communicative competencies.

The concept of personnel development is proposed to be implemented through the implementation of the following principles: recruitment using modern information approaches, management of labor and production discipline in accordance with the development strategy of the enterprise, the use of the Deming method in the personnel policy of the enterprise, rating selection of employees on a competitive basis, taking into account personal competencies, development of communicative competencies in performing labor functions in a team, ensuring maximum labor productivity while minimizing accidents and incidents.

To reduce the level of traffic accidents, it is recommended to eliminate the negative influence of the human factor by increasing the personnel competence, implementing a personnel policy according to the Deming principle in the form of a continuous circle of relationships for the formation of a personnel reserve, personnel involvement, motivation, awareness, development, adaptation and selection.

References

- [1] Novikov D A 2005 *Theory of Management of Organizational Systems* (Moscow: MPSI) p 584
- [2] GOST R 12.0.007-2009. *Occupational safety management system in the organization. General requirements for the development, application, evaluation and improvement* (Moscow: Standardinform) 2009
- [3] *Rules for the technical operation of railways of the Russian Federation: Ministry of Transport of the Russian Federation order No. 286 of December 21, 2010.*
- [4] Shishkina S V, Pristupa Yu D et al 2017 *IOP Conference Series: EES* **84** 012027
- [5] Shishkina S V, Pristupa Yu D et al 2018 *IOP Conference Series: MSE* **354** 012013
- [6] Shishkina S V, Pristupa Yu D et al 2018 *IOP Conference Series: EES* **206** 012052
- [7] Pristupa Yu D et al 2015 *Coal* **11** 54–57
- [8] Pristupa Yu D et al 2014 *Coal* **12** 50-52
- [9] Shishkina S V, Pristupa Yu D et al 2017 *Proc. of XI All-Russian Sci.-practical Conf. on Automation Systems in Education, Science and Production* (Novokuznetsk: SibSIU) pp 284–290
- [10] Yamalov I U 2010 *Modeling of Management and Decision-making Processes in Emergency Situations* (Moscow: Laboratory of Basic Knowledge) p 288