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ANALYSIS OF THE EFFECTIVENESS OF LABOR PROTECTION MEASURES (ON THE EXAMPLE OF THE AULSKY VODOVID UTILITY COMPANY)

АНАЛІЗ ЕФЕКТИВНОСТІ ЗАХОДІВ З ОХОРОНИ ПРАЦІ (НА ПРИКЛАДІ КП ДОР “АУЛЬСЬКИЙ ВОДОВІД”)

Actions to improve working conditions, systematic monitoring of the level of harmful and dangerous factors of the working environment, assistance in reducing occupational injuries and occupational morbidity are accompanied not only by social but also by economic effect. The economic efficiency of the measures carried out depends on the ratio of improvement of working conditions (estimated in monetary terms) and the amount of expenses of the enterprise for labor protection. As a result, the period of professional activity of workers increases, labor productivity increases, costs associated with occupational injuries and occupational morbidity are reduced, expenditures on benefits and compensations are reduced. In some industries, some progress can be made in reducing morbidity by reducing the impact of harmful factors of production on workers in the workplace, for example, by limiting emissions of harmful substances or using personal protective equipment.

Key words: costs for labor protection, efficiency, analysis, morbidity, diagram.

Як відомо, свою професійну діяльність людина здійснює на робочому місці – частині виробничого простору одного або групи працівників, яке оснащено технологічним обладнанням, інвентарем, інструментом, робочими меблями, необхідними для виконання певного виду робіт. Саме тому виникає необхідність здійснення активного процесу впровадження заходів з охорони праці. Працівники – найцінніші ресурси на підприємстві, і останнє, задля уникнення на людей впливу негативних чинників, що виникають як результат неефективної організації робочого

місця чи небезпек, зобов'язане здійснювати заходи щодо охорони праці. Однак такі заходи можуть різною мірою впливати на досягнення цілей: невеликі суми вкладень можуть позитивно вплинути на охорону праці, а інколи величезні капіталовкладення дають незначний результат.

В деяких галузях промисловості можна досягнути певні успіхи зі зниження захворюваності за рахунок зниження впливу шкідливих факторів виробництва на працівників на робочих місцях, наприклад, в результаті обмеження викидів шкідливих речовин або використання засобів індивідуального захисту. Однак, разом з тим, є необхідність більш ефективного комплексного вирішення цієї проблеми стосовно до кожного конкретного робочого місця, що полягає у наступному: дослідження джерел захворювання або небезпечних місць, розробка заходів зі зменшення впливу небезпечних факторів в джерелах їх виникнення, розробка лікувально-профілактичних заходів, що попереджують розвиток захворювань, розробка заходів з реабілітації людей, які працюють в шкідливих умовах.

Дії щодо покращення умов праці, системний моніторинг за рівнем шкідливих та небезпечних чинників виробничого середовища, сприяння зниженню випадків виробничого травматизму та професійної захворюваності супроводжується не тільки соціальним, а й економічним ефектом. Економічна ефективність здійснюваних заходів залежить від співвідношення покращення умов праці (оцінених у грошовому виразі) та суми витрат підприємства на охорону праці. Як результат, зростає період професійної активності працюючих, зростає продуктивність праці, скорочуються видатки, пов'язані з виробничим травматизмом та професійною захворюваністю, скорочуються видатки на пільги та компенсації.

Ключові слова: витрати на охорону праці, ефективність, аналіз, захворюваність, діаграма.

JEL Classification: I15; J01

Formulation of the problem. There is nothing more valuable than a person's health and life. According to the estimates of experts of the World Health Organization, human health depends on 8 % of the state of health care in the country where this person lives, 18 % on his genetics and 74 % on the way of life, including from working conditions and activities [1].

As you know, a person carries out his professional activity at the workplace – a part of the production space of one or a group of workers, which is equipped with technological equipment, inventory, tools, work furniture necessary for the performance of a certain type of work, with a set of factors of the production environment that affect health and the working capacity of a person in the process of work. That is why there is a need to carry out an active process of implementing labor protection measures.

Employees are the most valuable resources in the enterprise, and therefore, in order to avoid the impact on people of negative factors that arise as a result of ineffective organization of the workplace and the risk of danger in it, it is necessary to take measures for labor protection. However, such measures can have varying degrees of impact on the achievement of goals: small amounts of investment can have a positive impact on occupational health and safety, and sometimes huge capital investments have little effect.

Analysis of recent research and publications. In [2–4] it is shown that in some industries it is possible to achieve certain successes in reducing the incidence by reducing the impact of harmful factors of production on workers in the workplace, for example, as a result of limiting emissions of harmful substances or the use of personal protective equipment. However, at the same time, there is a need for a more effective comprehensive solution to this problem in relation to each specific workplace, which consists in the following:

- research of sources of disease or dangerous places;
- development of measures to reduce the influence of hazardous factors in the sources of their occurrence;
- development of therapeutic and preventive measures to prevent the development of diseases;

- development of measures for the rehabilitation of people working in hazardous conditions.

Formulation of the goals of the article. The purpose of the work is to analyze the incidence of workers at the KP DOR "Aulsky Water Supply" for 2018–2021, as well as to assess the effectiveness of labor protection measures carried out for the same period.

Presentation of the main research material. The communal enterprise of the Dnipropetrovsk Regional Council "Aulsky Vodovid" (CE DRC "Aulsky Vodovid") is the third largest enterprise in Ukraine, which has been providing drinking water for 55 years, the quality of which meets the requirements of the State Regulatory Act of Ukraine 2.2.4–171–10 "Hygienic requirements for drinking water intended for human consumption", more than 1.0 million consumers of the cities of Dnipro, Kamianske, Verkhnyodniprovsk and nearby settlements of Krynychanskyi, Dniprovskiyi, Verkhnyodniprovskiyi administrative districts of the region.

The management of the enterprise understands that, together with finances and production potential, the main capital is human resources, therefore, for their effective use, a separate structural unit was formed – the personnel management service, which deals with the appropriate selection, assessment of the professional qualities of employees, professional training and issues of personnel policy in perspective.

Functional efforts to improve working conditions depend on the correct labor protection organization and the effective work of the management structure – the labor protection service, which is engaged in monitoring working conditions for compliance with sanitary rules and regulations, ensuring safe work methods, and preventing industrial injuries and occupational diseases.

Its composition is represented by three specialists with appropriate professional education. In parallel, the security and protection service of facilities with a staff of 36 people and a laboratory – 12 people work in parallel, which carry out security measures, including labor protection, according to individual elements.

Tabl. 1 shows the number of employees at this enterprise for 2018–21.

Table 1. Quantitative assessment of employees at the enterprise of the CE DRC "Aulsky vodovid"

Years	Number of employees, total people	Number of working women, people	Percentage of men, %	Percentage of women, %
2018	413	154	62,7	37,3
2019	416	148	64,4	35,6
2020	412	155	62,4	37,6
2021	430	156	63,7	36,3

Source: compiled by the authors

As can be seen from Tabl. 1, over the past four years, the total number of employees of the enterprise has hardly changed, which emphasizes its stable economic capacity, low staff turnover and great interest of employees in their workplace.

Maintenance of complex engineering and technical structures and equipment of the CE DRC "Aulsky vodovid" requires, to a greater extent, qualified male personnel, the share of which has increased by 1.3 % in recent years (from 62,4 to 63,7). The total number of employees also increased by 18 people. The number of female employees is constantly stable – about a third of it, over the past three years the female staff has increased the most by 6–7 people.

A comparative analysis of the incidence of workers, as well as the cost of paying sick leave at the KP DOR "Aulsky Water Supply" for 2018–21 is given in the form of diagrams in Fig. 1 and 2.

In fig. Fig. 1 shows a comparative analysis of the company's expenses for the payment of sick leave for 2018–21, taking into account the amount of payments directly by the enterprise KP DOR "Aulsky Vodovid" and the Social Insurance Fund.

As you can see from the diagram, the largest amount of payments is 1511800 UAH. with 3146 days of incapacity for work in 2021, while the largest number of days of disability is 3492 days, but the amount of payments is much less – 756800 UAH.

In fig. 2. comparable analysis of the morbidity and expenses of the enterprise for the payment of sick leave per 100 workers for similar years is given.

So, as follows from the analysis, the company's costs for paying sick leaves increase every year, so it is necessary to constantly monitor the causes of the incidence of employees, their prompt elimination and constant financing of measures to ensure occupational safety.

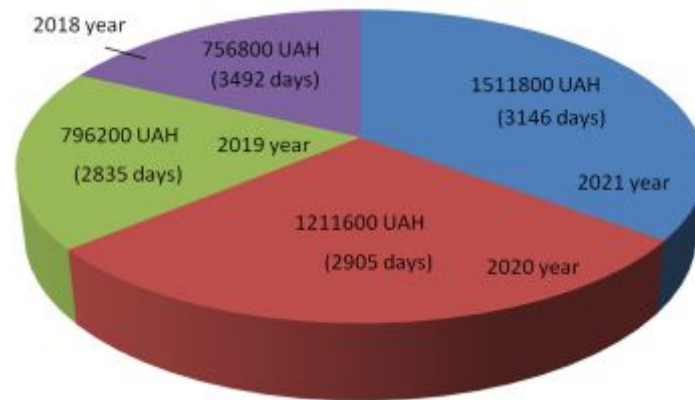


Fig. 1. Comparative analysis of the incidence and expenses of the enterprise for the payment of sick leave for 2018–21

Source: compiled by the authors

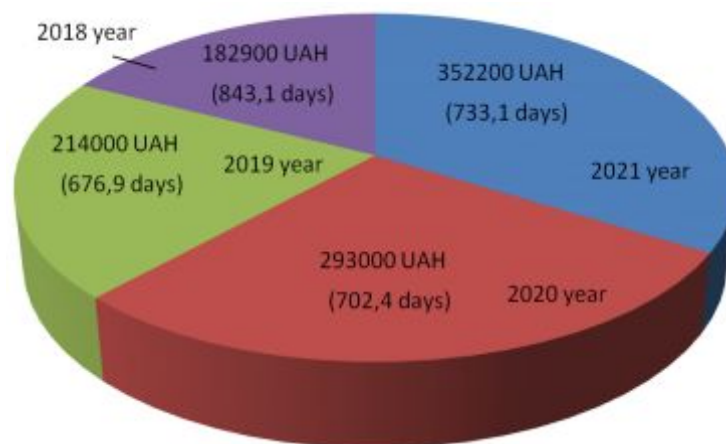


Fig. 2. Comparative analysis of the morbidity and expenses of the enterprise for sick leave for 100 workers for 2018–21

Source: compiled by the authors

This will ensure a reduction in the departure of workers from the technological process, which is very important for the features of the stable functioning of this enterprise, as well as reducing the costs associated with compensation for losses to victims or as a result of the disease of workers.

Next, we analyze the costs associated with ensuring labor protection in the enterprise.

The costs of enterprises for labor protection are divided into 3 groups [5, 6]:

1) expenses for benefits and compensation for harmful working conditions (additional vacations, reduced working hours, medical and preventive nutrition, obtaining milk or other equivalent products, increased tariff rates, additional payments for working conditions and intensity, pensions on preferential terms);

2) expenses for eliminating the consequences of industrial accidents (the cost of damaged equipment, tools, destroyed buildings, costs for rescuing victims, investigating accidents, paying salaries and additional payments for downtime, the cost of repairing partially damaged equipment, machines and mechanisms, buildings and structures, the cost of training or retraining employees to replace those who lost their lives due to death or disability);

3) costs of fines (for non-compliance with regulatory requirements, for violation of legislative requirements, for time of forced downtime due to dangerous performance of work and due to termination of work by the state labor protection supervision bodies, for non-compliance with contractual obligations with other enterprises, for damage to the population, housing stock, private property and environmental pollution, for untimely payment of the insurance contribution, untimely informing the Social Insurance Fund about the number of employees, the annual actual volume of products sold (works, services), the annual amount of wages at the enterprise, accidents at work and occupational diseases that occurred at the enterprise, about changes in technology works, type of enterprise or its liquidation).

Costs for the implementation of measures to improve conditions and labor protection are divided into capital investments, operating, operational, and current costs.

Capital investments include one-time costs that are used for the creation of fixed assets, their renewal, reconstruction, which can improve working conditions and, most importantly, guarantee the appropriate quality of drinking water and its delivery.

Operating expenses include: current expenses for maintenance and maintenance of fixed assets; additional current costs for maintenance of the main technological equipment during its improvement in order to improve working conditions and prevent injuries; costs and implementation of labor protection measures at the expense of a special fund and general factory costs.

As evidenced by the analysis of the implementation of comprehensive measures at the CE DRC "Aulsky vodovid" to provide employees with special means of personal protection, special clothing, special shoes, as well as the formation of skills of a conscious attitude to personal safety, considerable attention is paid to training employees in occupational safety issues at the enterprise. This is what the trade union committee and the labor protection service take care of the most.

When drawing up complex measures, preparing the section of the collective agreement on labor protection, the trade union active studies the state of affairs on social issues of labor protection, examines them at the meeting of the trade union committee, adopts a resolution with specific proposals for the inclusion of certain issues in the implementation.

The section of the collective agreement on labor protection undergoes a double trade union examination: first in the trade union committee – the commission of the trade union committee, then in the regional trade union committee. Therefore, each clause of the collective agreement is a reliable protection of the employee for safe work. Tabl. 2 shows the main indicators of the review of the state of conditions and labor protection at the CE DRC "Aulsky vodovid" over the past five years.

The costs of labor protection at CE DRC "Aulsky vodovid" significantly exceed those guaranteed by Ukrainian legislation, for example, in 2020 they amounted to UAH 1,330.25 thousand (1,8 % of the annual remuneration fund of the enterprise), for comprehensive measures – 704,57 thousand UAH, for the plan – 453,15 thousand UAH. Practically, such receipts have also occurred in recent years.

Tabl. 3 shows the distribution of costs for labor protection at CE DRC "Aulsky vodovid" for five years.

With the direct participation of the trade union committee, a medical worker's office was created and equipped with modern medical equipment to monitor the condition of workers who go to separate water lines, as well as confidence in their well-being and health, compliance with the rules of internal labor regulations in terms of sobriety at the workplace. Drivers undergo a flight medical examination every day before starting work. Also, a medical worker monitors the expiration of driver's licenses, the conclusions of narcologist doctor, psychologists, and medical examinations. Warns the relevant employees about this in advance. Such coordinated work of the administration and the trade union committee contributed to the fact that over the past five years, not a single production-related accident occurred at the enterprise, and the incidents of injuries of a non-production nature that

occurred at the place of occurrence (at places of residence, during movement, personal, traffic accidents) are insignificant, concern from 3 to 6 people in the last year.

Conclusions. Therefore, actions aimed at improving working conditions, systematic monitoring of the level of harmful and dangerous factors in the industrial environment, and promoting the reduction of industrial injuries and occupational diseases are accompanied not only by social, but also by economic effects.

Table 2. Indicators of the review of the state of conditions and labor protection at the CE DRC "Aulsky vodovid"

Name of indicators	Unit of measurement	Period (years)				
		2017	2018	2019	2020	2021
Implementation of the main planned tasks (income), UAH. %	Plan/fact	52670/ 51260 97,3	62695/ 58658 96,8	63353/ 62327 95,6	65012/ 68470 105,3	69713/ 67079 96,2
Implementation of comprehensive measures to improve labor protection conditions (quantity)	Plan/fact	14/14	18/18	19/19	19/19	19/19
Funds were spent on improving conditions and labor protection, including for comprehensive measures	Plan/fact thousand UAH	94,54/ 115,09 95,82	498,87/ 780,69 680,92	432,33/ 1228,35 990,96	453.15/ 1330,25 704,57	413,98/ 1166,17 1094,85
Improvement of working conditions for employees, men/women	People	7/1	45/15	33/12	38/2	27/11
Provision of workers with sanitary and household conditions	amount of people, %	326 100,0	326 100,0	326 100,0	332 100,0	332 100,0
Provision of overalls and personal protective equipment	%	100,0	100,0	100,0	100,0	100,0
The level of general morbidity in terms of 100 employees	people / days	210,4	843,1	676,9	702,4	733,1
Medical examinations of employees, total number / percentage - with payment	amount of people	-	308/ 100	260/ 100	320/ 100	423/ 100
The employees have recovered: - including in industry sanatoriums and prophylactics	amount of people	3	9	2	-	4
Taught the rules of labor protection, everything / supervisors	amount of people	9/4	387/41	385/8	387/-	371/11
Availability: - recreation and dining rooms; - shower and sanitary premises; - occupational safety offices and corners	amount	18 25 14	18 25 14	18 25 14	18 25 14	18 25 14

Source: compiled by the authors

Table 3. Indicators of the distribution of labor protection costs at the KP DOR "Aulsky water supply"

Name of indicators	Unit of measurement	Period (years)				
		2017	2018	2019	2020	2021
Reconstruction of household premises	thousand UAH	20,8	25,98	34,7	124,3	-
Repair of the administrative and household building		-	19,27	-	-	-
Provision of workers with milk and work clothes		65,4	67,0	63,5	60,74	54,6
Provision of workers with detergents		0,8	1,4	1,44	7,34	1,43
Conducting training on knowledge of labor protection regulations		0,85	1,44	1,95	2,4	2,25
Purchase of personal protective equipment and overalls		112,0	-	402,47	50,4	45,48
Installation of plastic windows		-	-	226,84	72,4	-
Insulation of the facade of the administration building		-	-	-	452,24	-
Reconstruction of the passage and domestic premises of the security service and object protection		-	-	-	-	18,3
Reconstruction of the heating system of the boiler room operator's room		-	-	-	-	18,3

Source: compiled by the authors

The economic efficiency of the labor protection measures implemented depends on the ratio of the improvement of working conditions (estimated in monetary terms) and the amount of the company's expenses for them.

The final result of the effective work of the labor protection service of the enterprise is an increase in the period of professional activity of workers, an increase in labor productivity and a decrease in its labor intensity, a reduction in expenses related to industrial injuries and occupational diseases, a reduction in expenses for benefits and compensations.

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