

Maximum values of the fatigue strength obtained during surfacing wire U7. In this case the hardness of the weld metal is determined by the carbon content: the higher the carbon content, the higher the hardness. Wire carbide contains alloying elements, however during surfacing, more intensive burning of carbon, as well as stirring with a basis (Steel 45), which leads to lower hardness of the coating material, but this increases the fatigue strength of samples. The coating hardness weld wire U7 HRC 35 ... 40. After surfacing due to the high cooling rates formed quench structure (martensite-troostite).

The hardness of the coating produced by welding wire 08H13 – HRC 30 ... 33. One indicator of the properties of the weld metal is hardness, which is sometimes identified with the wear resistance, but when assessing the durability necessary to consider the structure of the obtained coatings hardness of the matrix, the presence of carbides and their dimension, fastening carbides in the matrix. The microstructure of the coating is a "solid solution + chromium carbides". Alloys with similar structure with a low content of carbon have the ability to significantly increase the hardness, strength and wear resistance as a result of work hardening (when plastic deformation with a significant degree of plastic deformation), the use of surface plastic deformation after welding wire 08H13 improves fatigue strength of 25 ... 30%.

Implementing recovery technologies crankshafts promotes saving, as the cost of crankshafts on domestic engines ranging from 10 to 25%, and foreign – from 20 to 50% of the cost.

To restore steel crankshafts surfacing medium [Ar + (20 ... 30% CO₂)] 08H13 wire diameter of 1,6 mm is recommended, followed by hardening of surface plastic deformation .

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ASSESSMENT OF HEALTH STATE OF WATER TREATMENT WORKERS OF AN OIL REFINING ENTERPRISE

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The influence of harmful production factors on human health is analyzed. The negative impact of those factors on morbidity with temporary disability of the water treatment workers of JSC "Naftan" is established.

In the current conditions of the development of Belarusian leading industries the problems of efficiency and reliability of professional activity, as well as health protection and working capacity under the impact of unfavorable factors are becoming the main directions of occupational health and safety policy [1, p. 22].

A third of their lives people are busy with working activity. Therefore, it is very important that occupational conditions don't do any harm their health. The working activity of a person is necessarily influenced by various factors of the production environment, difficulty and intensity of labor process.

It is repeatedly proved that adverse production factors have negative impact on workers' health, cause all professional pathologies and account for up to 30% of the cases of morbidity with temporary disability. All these unwanted implications demand essential material inputs on carrying out medical and preventive measures, as well as on social benefits and compensations related to adverse working conditions [2, p. 67].

It is also necessary to consider that unfavorable economic situation of many enterprises caused by the financial crisis considerably complicates the solution of many problems of labor protection. Among the most serious problems

of the kind are difficulties in choosing priority preventive measures which may result in decreasing the workers' morbidity with temporary disability up to a certain acceptable level at the lowest cost [3, p. 88].

Morbidity rate with temporary disability in the statistics of general morbidity takes a special place reflecting state of health of the working population which is considered, in its turn, both as a prerequisite and one of ultimate goals of social and economic development of Belarusian state. Results of the analysis of morbidity with temporary disability allow to define not only the level and structure of morbidity of the working population or those of its separate groups, but also to a certain extent characterize the current condition and qualities of medical and sanitary service, help to control efficiency of health improving measures and medical care [4, p. 57].

It is well known that the majority of enterprises of oil refining industry in the Republic of Belarus are referred to a class of the maximum professional risk. There is a high probability of impact on workers with dangerous and harmful factors of production environment because of particular characteristics of a profession or special working conditions. Technological processes used at the oil refining enterprises are the source of air pollution. As a result, working zones at these enterprises get inevitably polluted by harmful substances, mostly by hydrocarbons and their derivatives. Such chemical environment strongly influences human body and leads to emergence of work-related diseases [5, p. 202].

Taking into consideration all said above, the analysis of workers' morbidity with temporary disability in a form of the statistical reporting No. 16 – VN for 2009–2011 on one of productions of the leading oil refining enterprises of the Republic of Belarus – water treatment works of JSC “Naftan Novopolotsk” was carried out.

In the sick lists analysis with temporary disability the standard indicators were used: indicator of cases of temporary disability due to illness, characterizing the frequency of cases of temporary disability due to illness per 100 workers; indicator of days of the temporary disability, characterizing the frequency of cases of temporary disability due to illness per 100 workers.

In compliance with the data presented in recent research, the most characteristic diseases of employees of the oil-processing enterprise were chosen, namely: malignant, good-quality and new growths formations of uncertain character, blood diseases and haematogenic bodies, endocrine system, gastrointestinal path, cardiovascular system of respiratory organs.

The analysis of dynamics of indices of indicators of incidence with temporary disability showed that in number of cases the increase by 1,1 times, in number of days of temporary disability in a little smaller degree – by 1,03 times is received.

The most significant growth was registered on the following diseases: sharp respiratory infections of the top airways (5,48); arterial hypertension (0,17); eye diseases of and their additional device (0,19); good-quality new growths and new growths of uncertain character formations (0,43).

It is noteworthy that incidence indicators in separate years for the studied period fluctuate in considerable limits. So, for example, the number of cases per 100 working emergence of good-quality formations and formations of uncertain type was registered the minimum quantity in 2011 – 1,15, and in 2010 – 2,11. But the growth of malignant formations is observed twice as many.

Observed growth of cases of malignant formations and diseases it is proved by the numerous literary data on cancerogenic and danger of mineral oils of oil genesis and their adverse influence on the condition of cardiovascular, nervous systems, systems of blood supply, respiratory bodies that allows to make some assumptions: periodic excess of maximum-permissible concentration of separate components in the air of a working zone; influence of chemical and physical factors; individual sensitivity of each person.

Thus, impact of harmful production factors on health water treatment workers at the oil processing enterprise during the small period of time can entail development of a large number of diseases and a variety of reasons for disability.

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