

## PLANNING THE ORGANIZATION OF DENTAL CARE FOR WORKERS IN CONTACT WITH EPOXY RESIN

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**The relevance of the work.** With the progressive growth of the chemical industry and the extensive chemicalization of multiple directions and branches of the national economy, the regular introduction into production of various chemical compounds with irritating, toxic, sensitizing, carcinogenic properties on the body, it is becoming increasingly relevant and very important to study them in more detail.

The properties of epoxy resins are regulated by modification and are the most common additives that are used to improve physical and mechanical properties such as modulus of elasticity and strength of plastic products. One of the most important applications of epoxy resins is protective coatings, which account for almost 69% of total consumption and in some products can also be used in a decorative function.

In the oral cavity of workers in the production of plastic products, chemical compounds as toxic dust can settle in the form of plaque in the area of the necks of the teeth, or through the damaged mucous membrane for faster penetration and absorption, which causes serious consequences in the form of periodontitis, stomatitis. The harm caused by chemicals to certain organs depends on the amount (dose) of these chemicals absorbed by the body. Inflammatory diseases, as well as periodontal damage, have an etiological connection with a violation of the microbiocenosis of the oral cavity.

The constant influence of chemical compounds in low concentrations in the air and on the mucous membrane of the oral cavity can contribute to a change in the composition of saliva, the structure of microbiocenosis, which eventually leads to a secondary deterioration in the hygienic condition of the oral cavity [Agaeva D.F. 2018].

The high prevalence, tendency to progression and multifaceted effects on both the dental system and the body as a whole, as well as ambiguous treatment approaches, make it possible to attribute periodontal diseases to one of the most problematic nosologies in modern medicine [Mingazaeva O.N., 2015].

To date, a huge number of schemes and methods of treatment of chronic periodontitis have been proposed [S.I. Gazhva et al., 2014; Z.M.Abaev et al., 2016]. Despite this, there is no decrease in the incidence of periodontal tissues [I.S. Ananyeva, 2017]. In addition, there is an insufficient level of professional training of dentists in periodontology, the unsatisfactory technical and material provision of medical

institutions affects, there are no clear criteria for evaluating the effectiveness of the treatment [L.A. Dmitrieva, Z.E. Revazova, 2016].

Recent studies conducted by foreign authors (M.T. Compton., Terebessy et al., 2016) show a decrease in interest in preventive measures in patients with periodontal diseases. According to Yu.A. Fedorov, insufficient attention to preventive measures in dental practice can lead not only to pathology of the oral cavity organs, but also to the appearance of general somatic diseases. Evaluating these positions, it becomes clear the need for new approaches in the organization of this type of activity, the development and planning of individual measures to prevent the development of dental pathology and improve the effectiveness of therapeutic manipulations, highlighting priority areas for primary and secondary prevention of inflammatory periodontal diseases in patients exposed to epoxy resin. To develop these measures, we have identified the purpose of the study.

**The purpose of the work is** to increase the effectiveness of complex treatment and prevention of periodontal diseases in workers, taking into account the peculiarities of their exposure to epoxy resin.

#### **Research objectives:**

1. To study the dental status of workers exposed to epoxy resin.
2. To determine the morphological changes and the state of the microbiocenosis of the gingival periodontal fluid in workers exposed to epoxy resin.
3. To study changes in markers of inflammatory and osteodestructive components of periodontal lesions, as well as the impact of dental health in the production of epoxy resin on the quality of life according to the MOA-SF-36 and OHIP-49-RU indices.
4. To study the state of nonspecific resistance of the body and local immunity of the oral cavity, the effectiveness of antioxidant protection of oral fluid in workers exposed to epoxy resin.
5. To develop and evaluate the effectiveness of a complex of therapeutic and preventive measures for workers in the production of epoxy resin.

The object of the study. The object of the study were 2 groups of patients.

Group 1 75 patients with chronic generalized periodontitis in workers

Group 2 – 65 patients with chronic periodontitis who do not have contact with epoxy resin.

#### **Scientific novelty.**

- data on the dental status of workers in the production of epoxy resin at the fiberglass plant will be obtained;

- data will be obtained on the state of local immunity of the oral cavity and on morphological changes in the periodontal tissues of workers in the production of epoxy resin;

- the indicators of the quality of life of workers in the production of epoxy resin according to the OHIP-49-RU index will be studied and the impact of dental health on it will be determined;

- as a result of the conducted research, a set of measures aimed at the prevention and treatment of chronic periodontitis in workers of epoxy resin production will be developed and its effectiveness evaluated.

Results and discussion: The impact of adverse factors of biological, chemical and physical nature leads to changes in the functioning of various systems of the human body [9, 2, 3]. A large number of studies have shown that the diversity and originality of etiological factors of the industrial environment, their various combinations and ways of influencing the body indicate the peculiarities of the development and course of occupational pathology, The originality of their pathophysiological and pathomorphological essence is determined.

Among industrial workers, there is a great need for oral sanitation, treatment of periodontal diseases and dental prosthetics. Modern methods of systemic and local prevention of caries and periodontal diseases are almost not implemented among the working population, including people who are exposed to occupational risk factors for dental diseases.

At the same time, against the background of the development of some industries, it is necessary to intensify work to preserve the dental health of employees of individual enterprises.

This problem should be solved by conducting large-scale epidemiological studies at industrial enterprises, followed by a situational analysis of dental morbidity and an assessment of the level of dental care for employees. For a number of enterprises and industries, it is necessary to develop targeted therapeutic and preventive programs to improve dental care for working contingents, primarily in harmful working conditions. Special attention should be paid to workers with long work experience who have been exposed to various harmful production factors or their combined effects for a long time.

The high prevalence, tendency to progression and multifaceted effects on both the dental system and the body as a whole, as well as ambiguous treatment approaches, make it possible to classify dental diseases as one of the most problematic nosologies in modern medicine [1, 4].

Fiberglass is currently used in a wide variety of sectors of the national economy, including shipbuilding, chemical, automotive, road, construction, aviation, production of various kinds of furniture, agriculture and household applications [3, 7].

Numerous studies of the dependence of the health status of the population on the influence of a chemical factor, conducted in our country and abroad, convincingly show that environmental pollution leads to the development of adverse health effects, expressed in an increase in mortality, morbidity, deterioration of physical development,

and the prevalence of premorbid conditions [8, 5]. Production processes of molding and ship collection Fiberglass hull structures are characterized by a high level of occupational risk. This risk is determined by the increased content of toxic substances included in the working composition of the NPS, namely: ammonia, styrene, toluene, epichlorhydrin, acetone, hexane, ethanol, formaldehyde, carbon monoxide, as well as dust in the air of the working area of the molding site, determined by generally accepted methods, heating and cooling microclimate, broadband noise, local vibration, the forced position of the body when performing labor operations.

Thus, the majority of working workers in the fiberglass industry were men aged 40 to 50 years and older (56.8%) with more than 15 years of work experience (54.8%). The workers employed in the new production are also represented by men, but the majority of them were 20-29 years old (73.9%). About 95% of the surveyed modern production had 6 years of work experience in the studied production and had not worked in harmful working conditions before.

When studying the toxic effect of styrene, the degree of informativeness of integral and specific indicators - the state of the NADPH-dependent biochemical system involved in the metabolism of foreign compounds, as well as changes in the parameters of the pupillary reaction - was assessed. The parameters of acute styrene toxicity were determined, round-the-clock experiments with styrene inhalation of rats were conducted for 1 month, during which changes in a number of physiological parameters, as well as in some biochemical systems, were recorded. The nature of specific changes in the parameters of pupillary reactions in acute and chronic styrene intoxication has been established.

Assessment of the state of NADPH-dependent biochemical systems and parameters of pupillary reactions are proposed as a criterion for the toxic effect of styrene.

During the hygienic assessment of the working conditions of molders and ship collectors of fiberglass hull structures, modern methods of assessing the production environment were used, it was found that the leading factor is chemical.

For the first time, calculations of occupational risk for the above-mentioned specialists were carried out using modern principles and criteria. An assessment of the relative risk of occupational diseases among fiberglass production workers is also given.

The main causes of the development of chronic occupational diseases (intoxication with aromatic hydrocarbons, toxic hepatitis), as well as the formation of a risk group for the development of occupational diseases and an increase in the degree of industrial conditionality for the development of dyskinetic disorders of the hepatobiliary system and disorders of the autonomic nervous system.

In workers of this production, chronic diseases are represented by the following diseases: digestive organs (54.1%), diseases of the circulatory system (35.8%), nervous system (26.0%), endocrine system, eating disorders and metabolic disorders (23.4%), diseases of the musculoskeletal system and connective tissue (20.9%). It should be noted that digestive diseases in workers with more than 15 years of work experience (41.2%) were diagnosed 3.5 times more often than in low-skilled workers (11.6%).

Chronic gastritis (21.8%) took the leading place in the structure of diseases of the digestive system, followed by peptic ulcer of the stomach and duodenum (12.6%). Of the diseases of the biliary system, biliary dyskinesia had the highest frequency (14.8%) (4.9).

Conclusions. The study of the pathogenetic conditionality of major dental diseases under the action of various industrial hazards is one of the priorities in dentistry and allows us to develop an effective program for the prevention of major dental diseases.

At the same time, a high prevalence of dental diseases has been noted among working fiberglass structures, which has recently remained unexplored.

Analyzing the literature data on the impact of occupational factors of various chemical industries on the formation of dental pathology, it can be stated that the prevalence of diseases of hard tissues of teeth, periodontal tissues and oral mucosa in workers of these industries was significantly more common than in control groups, where the effect of chemicals on the organs of the oral cavity is absent.

Among periodontal diseases, gingivitis occurred mainly in people with less than 10 years of experience, and periodontitis in workers with more than 10 years of experience. As the length of service increased, the number of workers with moderate periodontitis increased. The most common disease of the oral mucosa turned out to be keratosis, which was observed in workers 6-10 times more often than in control groups. At the same time, all the authors, without exception, pointed to the existence of a link between dental lesions, working conditions and work experience, which confirmed the professional nature of this pathology [6,9,11].

The literature data contain a large amount of data on the effects of various industrial hazards on various body systems, including the condition of the oral cavity. However, there is no assessment of the impact of production factors of chemical etiology in combination with adverse physical factors of the production environment on the condition of hard tissues of teeth, periodontal and oral mucosa (7, 10).

In the available literature, there is no data on the effect of a complex of harmful substances produced by fiberglass on the condition of the oral cavity, the relationship of the action of these complexes on the state of the oral fluid of workers has not been determined; the influence of dental morbidity of fiberglass workers on the quality of life has not been studied.

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