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EFFECTS OF TOXIC AND HARMFUL SUBSTANCES ON THE HUMAN BODY AND PROTECTION FROM THEM

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Abstarct
Toxic and harmful substances are substances that enter the human body in a small amount and enter into a chemical or physico-chemical interaction between tissues and tissues and cause health disorders under certain conditions.

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The air of working areas in production is often polluted with natural poisons of technological processes. Combustion of fuels in stoves, boilers and internal combustion engines causes the formation of exhaust gases.
For example, many toxic substances used in agriculture are special substances that increase the productivity of plants and kill their pests. They can include mineral fertilizers and about 150 types of toxic chemicals.[1.4]
In addition to these, there are dangerous vapors and gases of oil products, varnish, paint, acids, alkalis, which are also rural. It should not be forgotten that they are widely used in the economy and industry and are dangerous substances for humans.
Some poisons enter the human body through the respiratory and food intake organs. Long-term exposure to small amounts of toxic substances (lead, mercury) leads to continuous occupational poisoning, while a large amount causes acute poisoning. Many toxic substances easily change from liquid state to vapor and gas state when the temperature increases and enter the human body through the respiratory system.[2.4]
Through the respiratory tract of the human lungs, these substances are absorbed into the blood together with air and, passing into the large blood circulation system, affect the body 20 times stronger than such substances that enter the body in another way. For example, gasoline evaporates at a rate of 400 g/h from 1 m2 of surface at room temperature. Compared to other oil products, it poisons the body more. When the concentration of gasoline is 3...4 g/m3, a person who breathes it begins to swallow after 2...3 minutes, tears flow from his eyes, and his balance is disturbed when walking, while the concentration of 30...40 g/m3 is 3...4 causes poisoning and loss of consciousness after inhalation.[1]
Hydrogen sulfide and ammonia are more dangerous. They are collected in livestock farms and places where gung is stored. Sometimes their concentration is so high that a person loses consciousness after taking one or two breaths.

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Some toxic substances are dangerous due to their explosive concentration of gas and vapor. For example, 16...27% ammonia concentration and 0.76...5.03% gasoline concentration explode.

Thus, it is necessary to control the concentration of harmful substances in the air of working zones in order to prevent poisoning of workers, fire and explosion. Laboratory and express methods are used for this.

The chemical composition of the dirty air taken from the workplace in the laboratory method is thoroughly checked in the laboratory. In the express method, the concentration of a harmful substance in the air is checked directly at the workplace by passing the tested air through the indicator pipe. This work is carried out using a gas analyzer UG-2 (8.2-racm) or GX-2. After the concentration of a harmful gas or vapor in the air is determined, it is compared with the permissible concentration of harmful substances in the air according to the standard.[2.3]

In this case, if the concentration of harmful substances in the air exceeds the permissible norm, measures are taken to clean the air of the working zone. Complex mechanization and automation of hazardous work and technological processes is the most effective way to protect workers from gas, vapor or solid harmful substances.

Harmful substances can injure the human body, cause occupational diseases and cause other unpleasant situations.

Entering the body, chemicals that cause various disorders and diseases are considered production poisons. They are in the form of gases, vapors, dusts. Industrial poisons are inorganic (halogens - chlorine, bromine, etc.; sulfur compounds - hydrogen sulfide, sulfur gas, etc.; nitrogen compounds - ammonia, nitrogen oxides, etc.; phosphorus and its compounds - phosphorous hydrogen, etc.) and organic (benzene, alcohols , simple ethers) are divided into poisons.

Biological harmful factors have different effects on the body. Examples of these are allergies, dizziness, nausea, body heat and other effects.

Prevention of the effects of the above-mentioned factors is to reduce the amount of microorganisms in the air of the working room, to use disinfection, to use anti-bacterial lamps; including improvement of ventilation systems, hermetization of cabins and equipment, reduction of the amount of organic dust in the air, use of special clothes and medical supervision.

In addition, other factors have a harmful effect on the body. These include acids, alkalis, fuel lubricants, etc. For example, gasoline can irritate the skin and cause chronic eczema. Eczema and similar complications can also appear on the skin under the influence of lubricants.

When poisoned by vapors of gasoline and lubricants, changes such as headache, weakness, nausea, rapid heartbeat, and dizziness are observed. Gasoline and lubricants are also dangerous because they can explode. When working with them, it is recommended to use gas masks and special clothes. It is recommended to protect the skin of the hands with biological gloves.[4.5]

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The area of production facilities for construction is selected taking into account a number of sanitary requirements. These include the availability of drinking water sources, the absence of wetlands, etc. Buildings and structures on the territory of the enterprise are built facing the direction of light and wind for the purpose of natural lighting and ventilation.

Residential houses are built on the windward side around industrial buildings. The reason for this is to reduce the impact of smoke, dust, noise, etc. rising from the production facility. Depending on the nature and amount of harmful waste, a sanitary protection zone of 500-1000 m width will be established between the production enterprises or facilities and the inhabited district.

Each worker working in the production room should have an area of not less than 15 m3. Its height from floor to ceiling should not be less than 3.2 m. Processes that emit noise or harmful substances during production should be placed in a separate room. Floors in the workplace should be flat and non-slippery. If the floors are cold, the workplaces should be covered with carpets or wooden bars. To prevent drafts, external doors should be equipped with door locks, and it is advisable to make their doors self-closing. Production equipment, workstations should be placed in workplaces in such a way that there should be a passage of 1 meter wide between workplaces.

A sanitary-household room is a room for dressing, washing and eating with a closet for personal and special clothes. In addition, enterprises with more than 300 employees must have a medical center. If 15 or more women work at the enterprise in one shift, there should also be a private hygiene room for them.

The following types of radiation are common in production: infrared, ultraviolet, electromagnetic and radioactive. The places of influence of infrared rays are hot factories, the source of ultraviolet rays is the sun, mercury-quartz lamps, electric welding arcs, and the source of electromagnetic rays is radio waves, power lines and various high generators.

In recent years, artificial radioactive substances have become widespread in agricultural science and practice. They are used in the irradiation of seeds, plants, food products, in the assessment of soil fertility, in the assessment of the effectiveness of fertilizers, the role of trace elements, the quality of detail repair and resistance to spreading.

Infrared rays heat up the body, and ultraviolet radiation causes biological changes in subcutaneous tissue.

The most dangerous radiation is ultra-high frequency (UHF) electromagnetic and very high frequency radiation from generators, and they are widely used in radio detectors, nuclear physics, televisions, medicine, heat treatment of metals. Sources of high and ultra-high frequency fields in working rooms can be power transmission networks, induction coils, capacitors and unshielded elements of oscillating circuits.

Conclusion

Ways to protect against the effects of toxic and harmful substances

1. Reducing or completely eliminating technological processes that use toxic substances.

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2. Improvement of technology and equipment.
3. Carrying out hygienic and sanitary-technical measures, strict compliance with hygienic requirements in conditions of increased risk of poisoning, hygienic standardization, air environment control, individual (personal) protective equipment, etc.
4. Carrying out sanitary and treatment-prophylactic preventive measures.

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