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TOXIC EFFECTS OF CHEMICALS ON HUMAN HEALTH DURING EMERGENCY SITUATIONS IN CHEMICAL ENTERPRISES

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Abstract
This article describes emergency situations, poisoning thresholds, processes that occur in the body under the influence of toxic chemicals and toxins, the spread of toxic chemicals in the body, their excretion and metabolism, the classification of chemicals according to the mechanism of action, and the diagnosis of poisoning. Done.

Keywords: environment, emergency situation, toxic substances, concentration, lung alveoli, man-made, body poisoning, chemical compounds.

One of the priorities of the national state policy of our country is to protect the population and territories from natural and man-made emergency situations, ensure security, and achieve sustainable economic development. This means taking effective measures to identify emergency situations in advance and warn the population of this danger, to act quickly in the event of an emergency, to prevent people from becoming victims, to ensure that economic damage is minimal, and to ensure safety. requires provision at time z. In this regard, our government under the leadership of our President is doing a number of good things. In particular, Laws and decisions defining the legal basis for protecting the population from various emergency situations are being implemented on a large scale. As stated in the decision of the Cabinet of Ministers of the Republic of Uzbekistan No. 455 dated 27.10.1998, an emergency

situation is the loss of human lives, damage to human health or the environment in a certain area. It is a situation that occurred as a result of catastrophe, destruction, natural disaster, epidemics, epizootics, which can cause or have caused great material damage to people's life activities and its disruption.

According to the classification of man-made, natural and environmental emergency situations, accidents at chemically hazardous facilities occupy the highest place among man-made emergency situations. In this case, to the extent that toxic substances that have a strong impact on the environment (during a disaster) and damaging factors can cause or cause a lot of damage to people, animals and plants, the permissible limit Disasters, fires and explosions may occur in chemically dangerous facilities, which cause a deviation from the sanitary-protection zone in a much greater amount than the concentrations. Environmental emergency situations are understood as situations related to changes in the composition and properties of the atmosphere, in which extreme high pollution of the air environment with the following ingredients is observed, including sulfur(IV) oxide, nitrogen oxides, carbon oxides, the impact of soot, dust, and other harmful anthropogenic substances in concentrations dangerous to human health may be high, large-scale acid zones may be formed, and a large amount of acid waste may fall. Chemical compounds are one of the environmental factors that constantly affect the human body. The chemical environment of the external environment and the chemical composition of the organism are always in equal relationship, and the violation of this equality causes pathological changes in homeostasis. The distribution of toxic substances in the body depends on three main factors: environment, time and concentration.

1. The environmental factor is the direction of poison entering and spreading in the body, and the amount of poison depends on the volume of blood in the organ per unit of tissue mass. The maximum amount of poison per unit of time usually accumulates in the lungs, kidneys, liver, heart, and brain. The toxic process is measured not only by the amount of poison, but also by the sensitivity of the receptors present in the poison. Toxic substances that cause irreversible processes, for example, chemical burns of tissues due to acids and alkalis, are especially dangerous. Substances that cause functional changes, for example, narcosis, are considered safer, because these processes are reversible.
2. As a time factor, it determines the speed of entry and exit of the poison into the body, i.e., the effect and toxic effect of the poison in the time interval.
3. The concentration factor determines the concentration of the poison in the biological environment, including blood. Poisonous substances are such chemical compounds that exist in the atmosphere in different aggregate states (as vapor, gas,

aerosol, liquid, droplet). A poison is a highly toxic substance that enters the body in a small amount and destroys or kills its normal activity. Poisoning is a violation of normal physiological processes in the body as a result of the effect of a toxic substance on the body.

Poisoning of the body depends on the amount of toxic substances that have entered it, the general condition of the body, and the way in which the poison entered the body. Toxicity, i.e. toxicity, refers to the ability of chemical poisons to destroy and poison the body's vital activity. The toxicity of a poisonous substance depends on its physical and chemical properties and structure. One of the main factors determining the effect of poisons is their effect on the body in what amount or concentration. The very concept of poison is always connected with the quantity and concentration of the substance. When toxic substances enter the body through the skin and mucous membranes, clinical signs of damage appear after some time. Due to their good solubility in lipids and oils, toxic substances that have entered the skin remain under the skin for a long time, and as a result, the damage develops gradually and lasts for a long time. If exposed to high concentrations of a toxic substance, many fatal events occur. It is very dangerous to get a poisonous substance in the form of liquid drops into the eyes, because the poisonous substances that have entered the eyes are absorbed into the body very quickly through the mucous membranes. In this case, even a moderate concentration of the poisonous substance is fatal. When a poisonous substance gets into the eyes, it should be washed immediately, otherwise it will not be of any use. When damage occurs through the digestive tract, toxic substances occur only when poisoned water or food is consumed. Clinical symptoms appear after a minute or several hours. Absorption of toxic substances through the respiratory system goes to the body very quickly. This speed is due to the large surface area of the lung alveoli (100-150m2). It is caused by the thinness of the alveolar membrane, the speed of blood flow in sharp capillaries, and the lack of conditions for the retention of poisons.

Absorption of volatile compounds begins in the upper respiratory tract and is completely absorbed in the lungs. Most volatile non-electrolytes, carbohydrates, alcohols, ethers are absorbed according to the simple law in the direction of decreasing concentration gradient. The rate at which poisons enter the body depends on the physico-chemical properties of the poison, and the physiological state of the body is of little importance. Certain vapors and gases (hydrogen chloride, hydrogen fluoride, sulfur gases, inorganic acid gases) undergo changes in the respiratory tract itself. In addition, due to damage to alveolar membranes, they destroy the barrier and transport function and cause toxic pulmonary edema. Aerosols (dust, smoke, fog)

produced in most industrial enterprises form aggregates of particles (coal dust, silicate dust). They fall into the respiratory tract and are expelled. 80-90% of dust particles up to 10 micrometers are trapped in the upper respiratory tract, 70-80% of particles 1-2 micrometers and larger fall into the alveoli. Alveolar macrophages and the lymphatic system play a major role in the process of self-cleansing of the lungs. But due to the rapid absorption of metal aerosols into the bloodstream or lymph, they form a complex with proteins, and the increase in body temperature indicates the resorptive effect of poisons. The poisonous nature of carbon monoxide depends on its concentration in the air, how long a person has been breathing poisonous air, and physical work performed in the place of poisoning. Lung ventilation increases during physical work. For example, lung ventilation is 5 l/min at rest, 20 l/min during moderate physical activity, and 30 l/min during heavy physical activity. The maximum permissible concentration of carbon monoxide in the air of the working zone is 0.002% (0.03 mg/l). Carbon dioxide enters the body mainly through the respiratory tract. Due to the excessive size of the surface of the alveoli of the lungs, and the large number of lymph and blood vessels in the lung tissue, the gases that enter with the breathed air are quickly absorbed in the alveoli, causing the body to become poisoned. Its toxic effect is due to the fact that the divalent iron of oxyhemoglobin combines easily with reduced hemoglobin and forms carboxyhemoglobin. Carboxyhemoglobin does not have the ability to attach oxygen to itself, so hemoglobin cannot carry oxygen in the body. The amount of oxygen in the blood decreases sharply, as a result, hemic hypoxia develops in the body. The severity of carbon monoxide poisoning and hypoxia depends on the amount of carboxyhemoglobin in the blood. When carbon monoxide in the body stops, the carboxyhemoglobin in the blood begins to gradually break down and carbon monoxide is released through the lungs. If oxygen is introduced into the body under pressure, the breakdown of carboxyhemoglobin is accelerated. In this case, oxygen begins to separate carbon monoxide from hemoglobin through competition. Protective measures should be strictly observed when harmed by poisonous substances or suspected. In field conditions, the absence of draft ventilation devices, gas, water networks and sewage systems creates certain difficulties for conducting chemical tests. Therefore, it is necessary to observe the required safety equipment rules during the inspection.

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