

DANGEROUS EFFECTS OF TOXIC SUBSTANCES

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Key words: lungs, gastrointestinal tract, skin, toxic substances.

Abstract: Toxic substances are easily absorbed into all organs, including the brain, and can cause acute and chronic poisoning. Organic mercury compounds damage capillaries, causing dilation of blood vessels, increased permeability, and fluid transfer from blood to tissues, a process that exacerbates damage to the central nervous system. Compounds have a toxic effect on the heart, disrupt the regulation of heart activity.

Toxic substances can accumulate in the body for a long time. A long latent period from the moment of contact with toxic substances to the appearance of clinical manifestations is characteristic of such substances. Severe poisonings are characterized by symptoms such as respiratory failure, heart failure, paralysis, and kidney damage.

Ways of getting into the body: lungs, gastrointestinal tract, skin.

Routes of excretion: Urine is excreted slowly, mostly through the gastrointestinal tract.

Cadmium is one of the most dangerous toxicants in the outdoor environment. It occurs in small quantities in nature. Its poisonous properties have recently been discovered.

In recent years, cadmium has been widely used in industry. It is included in fuel oil and diesel fuel and is released during combustion. Cadmium as an additive to alloys in plating with galvanic coatings; for the preparation of cadmium pigment in lacquer, paint and ceramic production; as a stabilizer for plastics (for example, polyvinyl chloride); used in electric batteries. Cadmium can be released into the atmosphere and soil during industrial use and burning of cadmium-containing plastic waste.

Any form of cadmium is dangerous. Therefore, when food products are bought from plastic containers, cadmium contained in the container material is considered extremely dangerous. Cadmium absorbed by the body is excreted very slowly (0.1% per day), so chronic poisoning can easily occur. Early symptoms: damage to the kidneys and nervous system later causes severe bone pain. Impairment of lung function is characteristic of cadmium. First of all, it accumulates in the kidneys.

Cadmium cannot be removed from the natural environment, so it accumulates in large quantities and enters the human and animal food chain in various ways. Cadmium enters the human body mostly with products made from plants. Cadmium is easily transferred from soil to plants, which take up 70% of cadmium from soil and 30% from

air. The amount of cadmium that enters the body depends not only on the quantity of products containing cadmium, but also on their quality. For example, iron significantly alters cadmium accumulation. When the amount of iron in the blood is sufficient, the accumulation of cadmium stops. In addition, large doses of vitamin D are used as an antidote for cadmium poisoning.

Lead is one of the well-known antimony poisons. Lead is ubiquitous in trace amounts. Lead in soil can range from 2 mg/kg to 200 mg/kg. It is usually accompanied by other metals, often zinc, iron, cadmium and silver. Lead ore deposits are found in many parts of the world.

Metallic lead and its chemical compounds are used. Lead-tin is used in the production of lead-acid batteries for cars and electric vehicles. Lead is used in covering cables, making ammunition and shells, welding seams of iron cans, making engines, and printing. Lead oxide is used in the preparation of belilas, lead surics, ceramics, and glazes. Lead salts are used in the production of glassware, high-quality crystal dishes, television tubes and fluorescent lamps.

In the natural environment, primarily alkyl compounds of lead exist as toxicants. These include tetraethyl lead, which is added to gasoline as an anti-detonator. The high toxicity of lead compounds has recently been discovered. Previously, the toxicity of lead compounds was assessed based on the inorganic lead content in the body. A significant increase in lead content was also found in the glaciers of Greenland. WHO experts found that the amount of lead in food products - primarily in leaves and stems of vegetables - has increased to 2 mg/kg.

Environmental pollution occurs during lead processing and mine drainage. Pesticides containing lead allow it to leach into fruits and vegetables. Long-term use of lead-based pesticides pollutes the soil.

The main source of lead in food processing is metal cans, which account for 10% to 15% of food packaging. Lead from the lead deposits in the can welds into the product. About 10% of the lead ingested through food, drinking water and air is absorbed in the gastrointestinal tract. Various factors affect the level of absorption. For example, a decrease in calcium can speed up the absorption of lead. Vitamin D increases the absorption of both calcium and lead. Deficiency of iron allows absorption of lead-molasses, which is usually observed during starvation. The high amount of carbohydrates and low protein in the diet also has the same effect. Once lead enters the circulatory system, it spreads to all organs, including blood cells and plasma. In the blood, lead mainly interacts with erythrocytes. The concentration of lead in erythrocytes is almost 16 times higher than in plasma. Lead enters the brain in small amounts, where it accumulates in small amounts.

Lead metabolism is more likely to involve calcium metabolism. Both metals are present in the crystalline structure of bones. bones are mainly composed of calcium

phosphate. Lead affects blood vessels, nervous, gastrointestinal and renal systems. Acute lead poisoning manifests as gastrointestinal disturbances. Abdominal colic may occur due to loss of appetite and dispensation.

In case of lead poisoning, the shortening of the life cycle of erythrocytes can cause anemia. The effect of lead on the central and peripheral nervous system has been carefully studied. Acute encephalopathy may occur. Decreased mental capacity, aggressive actions are observed. Damage to the peripheral nervous system causes paralysis of the muscles of the arms and legs. Lead has been proven to cause chronic disease when it enters the body regularly.

Lead and its inorganic compounds - such poisons, depending on their aggregate state, enter the body through the respiratory tract, gastrointestinal tract, and partly through the skin. In production conditions, they often enter the body through the respiratory tract in the form of dust, aerosols, vapors.

Poison entering the body through the mouth is mainly related to household intoxications, in some cases, this condition is also observed when hygienic norms are violated in production. When inhaled, lead and its compounds are absorbed and enter the bloodstream directly. When taken orally, these substances are absorbed in an ionized form, which is made possible by the presence of chlorides in gastric juice (a soluble compound - lead chloride is formed). Absorption occurs mainly in the upper part of the small intestine, where fatty acids form a lead emulsion in bile. Lead particles pass through the blood vessels, enter the liver, and then enter the general bloodstream. Lead that enters the liver is partially absorbed by its cells and slowly excreted with bile.

In the blood, lead is contained in blood proteins, lead phosphate, enters erythrocytes, where it combines with proteins. Lead is one of the toxic substances that accumulate in the body. Most of the lead passes from the blood to the bones, where it accumulates in the form of insoluble phosphates, because the metal has the ability to displace calcium from bone tissue. In addition, lead can accumulate in muscles, liver, kidneys, in small amounts in the brain, myocardium, and lymph nodes. It is determined that the severity of lead poisoning is not determined by the amount of lead accumulated in the body, but by its amount in the blood. Lead slowly enters the blood from its accumulation site years after contact. Accelerated release of lead from the site of accumulation can be caused by: alcohol consumption, injuries, heat, eating disorders, diseases. These factors are transformed and transferred to the blood.

Lead compounds have selective toxicity for kidneys, liver, intestine, erythrocytes and nerve cells. Lead is removed from the body mainly through the intestines and kidneys, a small amount is excreted with sweat and saliva.

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