

ANALYSIS OF ENVIRONMENTAL POLLUTION FROM EXHAUST GASES FROM VEHICLES

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***Annotation.** Nowadays, humanity is realizing the need to radically change its place in the world around us and its relationship to the natural environment. It is associated with the creation and preservation of favorable natural conditions for human life on Earth, the harmonization of the development of nature and society, and the solution of environmental problems of modern society.*

***Key words:** ecology, fuel, gases, automobile, sulfur, gasoline, soil, atmosphere.*

The atmosphere is characterized by extremely high dynamics, which is caused by the rapid movement of air masses along the surface and in vertical directions, as well as high speeds and a variety of physicochemical reactions occurring in it. The atmosphere is now considered a huge “chemical cauldron” under the influence of numerous and variable anthropogenic and natural factors. Gases and aerosols emitted into the atmosphere are characterized by high reactivity. Dust and soot formed during fuel combustion, forest fires, absorb heavy metals and radionuclides, and when deposited, can pollute vast areas and enter the human body through the respiratory tract.

The main causes of air pollution are the combustion of natural fuels and metallurgical production processes. A number of pollutants are released into the air from stoves, furnaces, kilns, and automobile exhaust pipes.

Among them, sulfur dioxide is a poisonous gas that is easily soluble in water. The concentration of sulfur gas in the atmosphere is especially high around copper smelting plants. It causes the decomposition of chlorophyll, the failure of pollinating seeds to develop, and the drying and shedding of leaves of deciduous trees. Sulfuric acid solutions fall to the ground with rain, harming living organisms and corroding buildings. An acidic reaction begins in the soil, which washes away humus, which contains organic substances necessary for plant development. In addition, the amount of calcium, magnesium, and potassium salts in it decreases. In acidic soils, the number of animal species living in it also decreases, and the rate of decomposition of manure decreases. All this creates unfavorable conditions for plant growth.

Billions of tons of CO₂ are released into the atmosphere each year from fossil fuel combustion. Half of the carbon dioxide produced by the combustion of fossil fuels is absorbed by the oceans and green plants, while the other half remains in the air. The amount of CO₂ in the atmosphere is gradually increasing and has increased

by more than 10% in the last 100 years. CO₂ creates a phenomenon called the “greenhouse effect”, which traps heat radiation that is radiated into space. Changes in the amount of CO₂ in the atmosphere have a significant impact on the Earth’s climate.

According to data provided by scientists today, as a result of human activity in the world, 25.5 billion tons of carbon monoxide, 190 million tons of sulfur oxides, 65 million tons of nitrogen oxides, 1.4 million tons of freon, organic compounds of lead, hydrocarbons, including carcinogenic ones, and a large amount of solid particles (dust, soot, black mold) enter the atmosphere annually.

Transport is considered one of the main pollutants of atmospheric air, water bodies and soil. Under the influence of transport emissions, especially in densely populated areas, the stratification and destruction of ecosystems occur. The problem of recycling and disposal of waste generated during the use of transport vehicles, including at the end of their service life, is acute. A large amount of natural resources are used for the needs of transport. As a result of the increase in the level of noise pollution from transport, the quality of the environment decreases. All this indicates the need to develop theoretical foundations and methodological approaches to solving environmental problems of transport.

One of the striking features of our time is the automotiveization that has swept the planet. Car emissions account for a large share of atmospheric pollution.

In the last 70 years alone, the world's automobile fleet has increased 19 times and has exceeded one billion. This process has been especially intense in Europe, where the number of cars has increased more than 30 times over the past half century. According to the magazine "Motor Vehicle", in 1995, automobile production amounted to: in the USA - 12 million; in Japan - 10.2; in Germany - 4.7; in France - 3.5; in Great Britain - 1.8; in Italy - 1.7 million cars. In total, more than 40 million cars roll off the assembly lines of automobile factories in the world annually.

In developed countries such as Canada, Germany, Italy, Japan, France, Great Britain, there are 500-700 cars per 1,000 people, and in the USA - about 800. While in Russia there are about 150 cars per 1,000 people, in Uzbekistan this figure is 67, and it is growing very rapidly. No matter how large the figures are, it is still far from fully satisfying the needs of the inhabitants of the planet for cars. In any case, according to foreign forecasts, the world's car fleet will continue to grow.

The spread of the automobile throughout the world is due to the internal combustion engine, which was created about 130 years ago, but which had no competitors until then. It develops a lot of power with a relatively small mass, is quite accurate, economical, and runs on relatively cheap fuel. The internal combustion

engine guarantees high speed and good traction of the car in any driving conditions. However, over the years, as the number of cars increased, a significant drawback of the IYM began to manifest itself - it was found that it was a cause of atmospheric air pollution, especially in large cities. When a large number of cars accumulate, the amount of harmful substances emitted into the atmosphere with exhaust gases increases to an unacceptable level. For example, as early as the 1960s, there was a sharp increase in the number of deaths from cardiovascular disease in London due to smog caused by car exhaust fumes. In the 1970s, the levels of smog on the streets of Tokyo were so high that traffic controllers had to wear anti-smoke devices.

Currently, 40-50% of all harmful emissions into the environment are accounted for by motor transport. Each car, traveling an average of 15 thousand km per year, burns 2 tons of fuel and uses 26-30 tons of air, consuming 4.5 tons of oxygen, which is 50 times more than human needs. Each car emits on average (kg/year): carbon monoxide - 700, nitrogen dioxide - 40, unburned hydrocarbons - 230 and solids - 2-5, in addition, when using leaded gasoline, it emits a large amount of lead compounds into the atmosphere. Transport also poisons water bodies, soil and plants.

Exhaust and crankcase gases, vapors from the carburetor and fuel tank are also toxic emissions from an internal combustion engine. The main part of toxic additives is released into the atmosphere with exhaust gases from the engine. Approximately 45% of the total hydrocarbon emissions into the atmosphere are released with crankcase gases and fuel vapors.

The amount of harmful substances released into the atmosphere in exhaust gases depends on the general technical condition of the car and, in particular, on the technical condition of the engine, which is the main source of pollution. For example, when the carburetor is not adjusted correctly, carbon monoxide emissions increase by 4...5 times.

The use of leaded gasoline containing lead compounds causes atmospheric air pollution with extremely toxic lead compounds. Approximately 70% of the lead added to gasoline with ethyl alcohol enters the atmosphere in the form of compounds with exhaust gases, 30% of which falls directly to the ground from the exhaust pipe of the car, 40% remains in the atmosphere. One truck with an average load emits 2.5...3 kg of lead per year. The concentration of lead in the air depends on the amount of lead in gasoline.

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