

# WAYS TO REDUCE THE EFFECTS OF HARMFUL SUBSTANCES IN THE ATMOSPHERE THAT THREATEN THE WHOLE WORLD

Turakulova Gulasal

Senior lecturer, Andijan machine building institute,

**Abstract:** This article analyzes the researches and their results on the prevention of toxic gases, heavy metal residues and their harm in the air, which pose the greatest threat to humanity and the ozone layer. Decreasing its amount causes the human body to malfunction, and may even lead to death. For example, a person can live without water and food for several days or even months, but without atmospheric air, he can live only for a few minutes. The air layer considered necessary for human and other living organisms to adapt to the existing air is located in the lower part of the atmosphere, that is, the troposphere.

**Keywords:** *troposphere, condensation core, anthropogenic pollution, greenhouse effect, photochemical processes, ionosphere, chlorofluorocarbon.*

**Introduction.** The atmosphere is at the surface of the earth provides living organisms with oxygen and other necessary gases, protects against various ultraviolet rays, meteorite particles in the sky and sudden temperature changes. The atmosphere also acts as a kind of thermoregulator on the Earth, that is, if there were no atmospheric air, the surface of the Earth would cool down to  $-170^{\circ}\text{C}$  at night and warm up to  $+150^{\circ}\text{C}$  during the day, that is, the Earth, like the moon, would become a lifeless planet [1]. Oxygen is produced by the photosynthesis of plants. In life, all living things breathe oxygen. Decreasing its amount causes the human body to malfunction, and may even lead to death. For example, a person can live without water and food for several days or even months, but without atmospheric air, he can live only for a few minutes. The air layer considered necessary for human and other living organisms to adapt to the existing air is located in the lower part of the atmosphere, that is, the troposphere.

The thickness of the troposphere at the north and south poles is 8-10 km, and at the equator 16-18 km goes up to Air temperature decreases by  $0.6^{\circ}\text{C}$  for every 100

meters of altitude. 10 km at altitude, the temperature reaches  $-45^{\circ}\text{C}$  in summer and  $-60^{\circ}\text{C}$  in winter. The outer layer of the troposphere shields life on Earth from the sun's ultraviolet rays [2].

The cleanest air is over ocean waters. The amount of dust particles in the air over villages is 10 times higher than the ocean surface, over cities 35 times higher, and over industrial enterprises up to 150 times higher. Air pollution with dust 1.5-2 km is the height; intercepts 20% of sunlight in summer and 50% in winter. The continuation of life on earth depends mainly on the cleanliness of the air. For example, a person can live for several days without food and water, but only 5 minutes without air. One person per day 1 kg food and 2 l drinking water 25 kg uses air for breathing. Therefore, air pollution should not be allowed [1,2].

Clean air is necessary not only for humans, but also for animal and plant life, antibiotics, semiconductors, and industries that produce precision measuring instruments.

Atmospheric air consists of a mechanical mixture of various gases, consisting of gaseous nitrogen (78.9%), oxygen (20.1%), argon (0.94%), carbon dioxide (0.06%), the sum of hydrogen, neon, helium, krypton, methane, etc. is 0.01%. In addition, there are water vapors, dust particles, wastes of industrial enterprises in the atmosphere, which are formed by premature combustion of fuel products[2,3].

Rapid industrial development, burning of various fuels, depletion of forests, ocean waters as a result of pollution with oil products, detonation of nuclear weapons, the amount of oxygen in the atmosphere has decreased sharply, and the amount of carbon dioxide and nitrogen oxides has increased. If the amount of carbon dioxide increases, the temperature of the earth's surface may increase by  $1.5-4.5^{\circ}\text{C}$  after another 50 years if atmospheric pollution is not prevented. For this reason, scientists make different assumptions about the change of the geographical environment due to the melting of glaciers, the rise of the ocean water level, and the flooding of a part of the land.

Atmospheric currents (wind), climatic regions, moisture zones are formed as a result of the sun not heating the globe evenly. The air flow carries with it heat, humidity, dust and powders created by natural and human activity.

Earth's atmosphere as reported by satellites, rockets, and astronauts 100 km in the upper part, its composition (excluding the increase of water vapor and nitrogen) consists of the gases mentioned above. 1000-1200 km At altitude, the atmosphere is mainly oxygen and nitrogen, above it-2500 km helium gas in the part up to 2500 km and above consists of the lightest gas - hydrogen [3].

In addition to gaseous substances, the atmosphere contains small particles - aerosols (smoke, dust, dust, etc.) that differ from each other according to their shape, size, chemical composition and physical properties.

By atmospheric pollution, we understand the disturbance of the balance of naturally occurring gases in its composition due to the influence of various gases, solid particles, dust, radioactive dust, water vapor, etc., as a result of natural and artificial factors, as well as a change in its quality. Below we will consider two different ways of polluting nature:

**Natural pollution of the atmosphere** various natural disasters - earthquakes, typhoons, cosmic dust, volcanic eruptions, rock and soil erosion, remains of plants and animals, forest and steppe fires, sea waves with salt particles released into the air, aeroplankton plays an important role. Natural pollution of the atmosphere does not cause significant damage to living organisms on Earth, on the contrary, dust particles in the air absorb solar radiation and protect living organisms from its harmful effects.

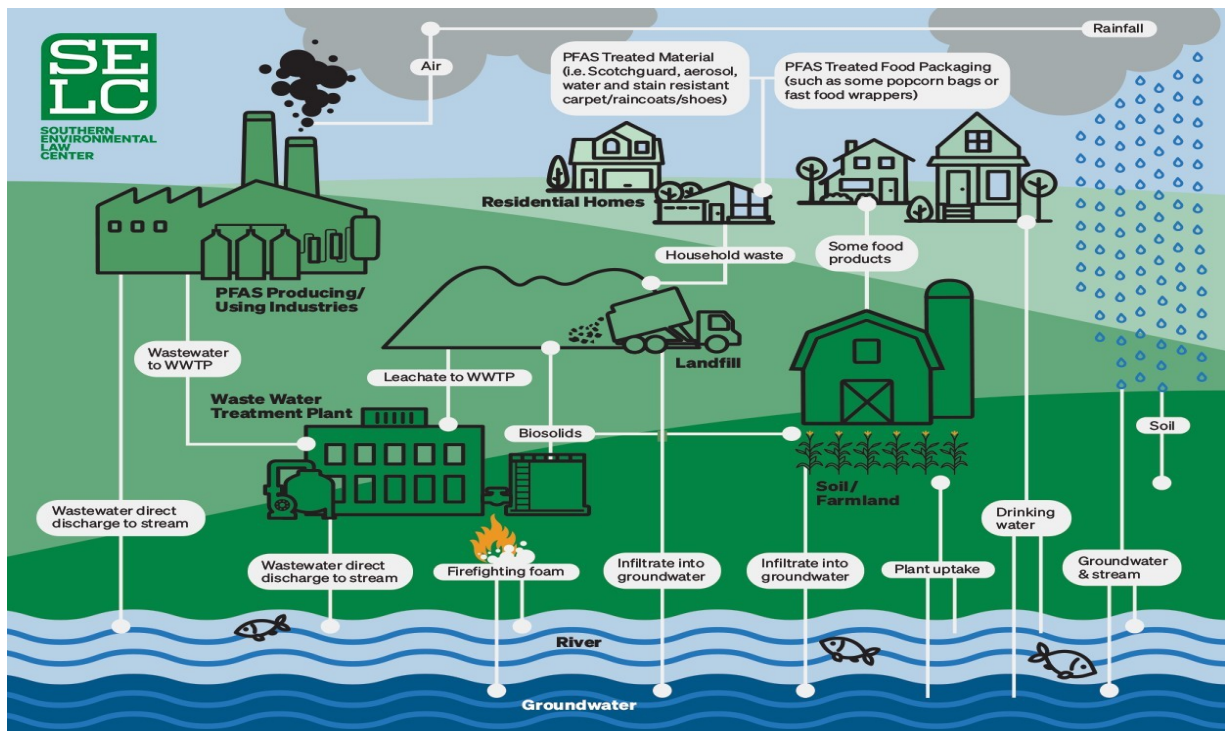


Figure 1. Situations of atmospheric pollution.

Every year 106 tons of dust fall into the atmosphere from space. When a powerful volcano erupts, 75 mln, m3 of dust. Also, when the sea water is agitated, many salt particles are released into the air. In addition, dust, sand and other solid particles, plant dust are added to the air as a result of wind and fire. This causes the mass of the Earth to increase [4].

Natural dust in the atmosphere is of great importance for processes occurring on the surface of the earth. Because dust is a condensation nucleus for water vapor and causes fires. It can be seen from this that the natural dust in the atmosphere is a necessary element of the atmospheric composition and regulates the course of events and processes in it. But in some cases, due to the eruption of volcanoes and the rise of strong dust, the air becomes more polluted than normal and can cause accidents.

**Artificial (anthropogenic pollution) of the atmosphere.** Since the second half of the 19th century, the intensive development of production in the world, especially in capitalist countries, accelerated the artificial pollution of the atmosphere.

Artificial pollution of the atmosphere in the niche, automobile transport takes the first place (40%), energy industry (20%) takes the second place, enterprise and

organization production takes the third place (14%). 26% of the artificial pollution of the atmosphere is due to agricultural production, household utilities, etc. [5].

Economic activities of people on Earth now 500 mln. Sulfur gas, (SO<sub>2</sub>), sulfide oxide, nitrogen oxide, carbon dioxide and pesticides are released around t. In addition to these, ash, zinc, lead, copper, dust and other solid substances are released into the atmosphere from cement, coal, metallurgical and other industries. Also, soil erosion and deflation increased due to the cutting of forests and plowing of large areas, the number of fires in forest meadows increased, and the extensive use of pesticides in agriculture resulted in the atmospheric composition of dust, smoke, soot, toxic substances. substances diffuse. Clean air is also essential for plants, animals and agricultural crops. Even industries that produce antibiotics, semiconductors, and precision measuring instruments need clean air.

Atmospheric pollution does not only negatively affect the health of living beings on our planet, especially humans, but also causes great damage to the national economy.

Therefore, one of the most important issues today is keeping the atmosphere clean.

As a result of the launch of aviation and rockets, 300 tons of aluminum oxide are released into the upper atmosphere in the form of white powder. This substance doubles the amount of ice crystals in the clouds, as a result of which the return of the Sun's rays increases, the rockets do not pollute the atmosphere, but also affect its composition and movement. Because rockets consume a lot of oxygen and even affect the state of the ozone layer. 1800 km The "window" (in some sources) created a "hole", which was filled after 1.5 hours. According to scientists' calculations, if 125 rockets similar to "Saturn-5" are launched in a short period of time, the Earth's ozone layer will be destroyed, and as a result, living organisms on our planet may be destroyed. The ozone layer absorbs solar radiation and serves as a screen protecting living organisms from its harmful effects. Ozone molecules are naturally formed as a result of photochemical processes in the atmosphere - lightning, thunder, lightning, etc. Artificially, it is formed in various ozonators, in the process of simple welding and in the short circuit of an electric charge [6].

Today, an ozone hole has formed in the atmosphere of the Antarctic continent and the lower regions of Australia, and this hole is expanding day by day. The main chemical compounds that destroy the ozone molecule are various chlorofluorocarbons, freons used in refrigerators, and aerosols. It is known that one molecule of chlorofluorocarbon destroys more than 3 thousand ozone molecules, and this process is based on the chain reaction mechanism. The convention banning the production, use and distribution of compounds that deplete the ozone layer was adopted in 1986 at an international conference held in Monreal, Canada.

Further analysis The issue of the restoration of the ozone layer The COVID-19 virus, which has spread throughout the world, has not only caused great damage, but the level of air pollution has decreased significantly. Scientists have given different analyzes that the depletion of the Ozone layer, which has become a global problem in the whole world, has significantly recovered during this period. It follows that this shell has the property of regeneration.

The weight of the world's industrial facilities is also significant in atmospheric air pollution. Because fuel and fuel used in industrial enterprises, especially in thermal power plants, do not burn completely, as a result, many gases, dust, soot, solid particles and radioactive substances are released into the environment. Currently, thermal power plants supply most of the energy around the world. Therefore, thermal power plants account for 20% of industrial emissions.

More than 30% of the fuel produced in the world is used by thermal power plants. Some of these fuels pollute the atmosphere in the form of toxic gases, soot, and smoke. 51,000 tons of coal are burned in one month at the "Elektrisitete France" thermal power plant in France; as a result, 33 t of sulphite anhydride gas, 250 t of ash and soot are emitted from the chimneys of the station every day. It is known that power plants, especially thermal power plants, heavily pollute the atmosphere with toxic gases and solid particles. In addition, some industrial enterprises, in particular, cement factories, chemical, ferrous metallurgical enterprises, etc. emit a lot of dust, various gases into the atmosphere and consume a lot of oxygen, besides polluting the

air. For example, to extract 1t of iron ore 150 m<sup>3</sup>, 35 to get 1t of steel 70 m<sup>3</sup>, to get 1t acetylene 3600 m<sup>3</sup> oxygen is consumed.

Mining in air pollution, household -communal economy (houses) also participates. This caused an increase in the amount of chemicals in the atmosphere due to the burning of various fuels. According to data, the amount of dust in the atmosphere has increased by 20% compared to the end of the 19 th century [4].

Depending on the amount of dust in the atmosphere, the regions are divided into 4 indicator levels:

1. 0.3 mg/m<sup>3</sup> – this indicator is considered clean. This indicator mainly includes the atmospheric air of rural areas and small non-industrial urban territories.

2. 0.6 mg/m<sup>3</sup> - this indicator is considered low pollution. This indicator mainly includes atmospheric air in populated areas of developed cities.

3. 1.0 mg/m<sup>3</sup> - this indicator is considered heavily polluted. This indicator mainly includes atmospheric air of industrial areas of industrialized cities.

4. 3.0 mg/m<sup>3</sup> - this indicator is considered polluted beyond the norm. This indicator mainly includes the atmospheric air of industrial enterprises producing a large amount of dust emissions [6].

In recent years, the weight of vehicles in atmospheric pollution is increasing. Because automobiles, airplanes, diesel locomotives, agricultural machines, etc. consume a large amount of oxygen and emit various gases (carbon dioxide, nitrogen oxides, hydrocarbons, toxic compounds of lead) into the atmosphere (which contains about 200 toxic substances). dust, soot, etc.) and contaminates it.

Now there are 400 million people on Earth, more than 300 million cars per year into the atmosphere. It is polluting by releasing various toxic gases, dust, soot and other solid particles, 200 mln. t of carbon dioxide, 50 mln. t of hydrocarbons, 30 mln. t corresponds to nitrogen oxide, and the rest to other gases, dust, soot and solid particles. In addition to polluting the atmosphere with various toxic gases, cars consume 3-4 times more oxygen than the world's population breathes. One car engine consumes as much oxygen as 20-30 people breathe in a year. Also, airplanes play a big role in atmospheric pollution and consumption of a lot of oxygen. A Concorde

super jet airliner flying only between the USA and Europe consumes 50-75 tons of oxygen in 8 hours. A forest of 25-30 thousand ha area supplies this amount of oxygen within 8 hours. The weight of rockets in atmospheric pollution is increasing [5].

In the second half of the 19 th century, the growth of industrial production and the appearance of highly toxic gases in the chemical industry forced the governments of a number of countries to take legal measures to limit them.

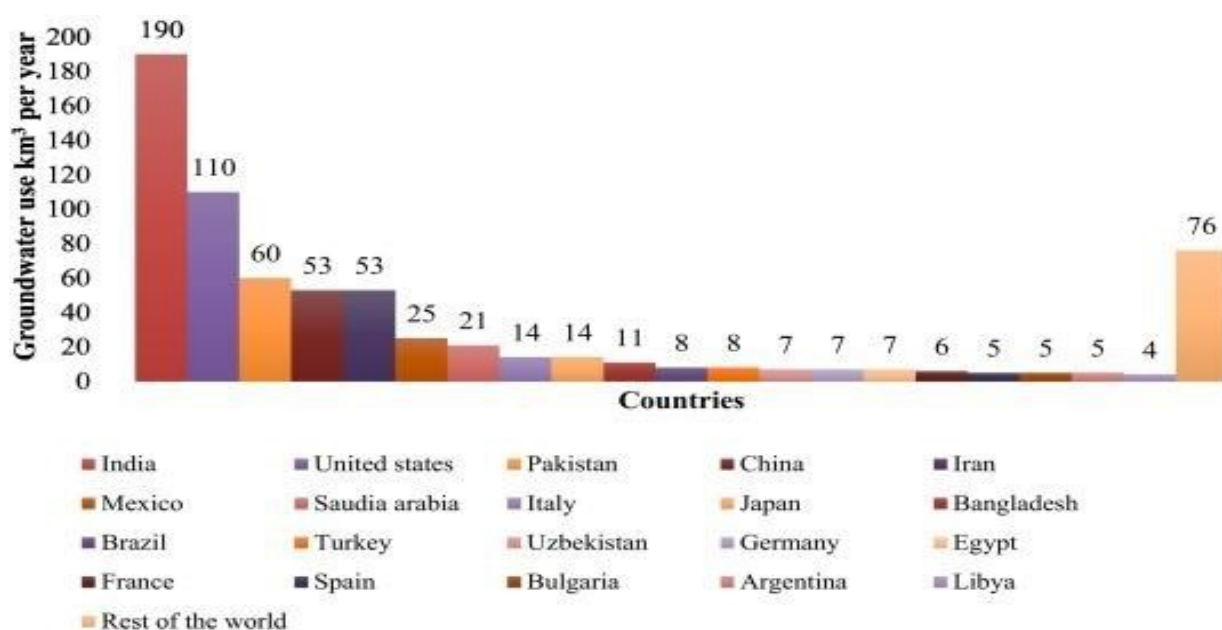
The first large-scale disaster occurred in 1930 near the Maas River (Germany). The layer of fog thickened the smoke coming from the enterprises so that thousands of people had difficulty breathing for several days, 60 people lost their lives.

In 1948, 17 deaths were recorded in the city of Donora (USA) under similar conditions. The fog also produced dire consequences in London. Here in 1952, 4000 people died due to acute suffocation for 14 days. When such a tragedy occurred in 1956, approximately 1,000 people died[4].

In Los Angeles, famous for its temperate climate, thick smoke caused serious consequences and caused great damage to property and plants. In this case, the reason for this is the exhaust gases released from cars, while in Europe it is the smoky gases of industrial enterprises.

In other parts of the globe, atmospheric pollution with exhaust gases has harmful effects on forests, fields, livestock, buildings, metals, etc. To date, the damage caused by waste gases in the USA is 10 billion per year. was estimated to be higher than the dollar, which did not take into account their impact on the health and property of the population.





**Figure 2. Pollution level of countries around the world.**

### Summary

Such catastrophic consequences have prompted the governments of developed countries to seriously study this problem and take protective measures. At the moment, the issue of the expediency of joining the Republic of Uzbekistan to the UN EC Convention "on long-range transboundary air pollution" (KTSVBR) is being actively worked on. An analytical note was drawn up on the results of the study of the feasibility of adding the Republic of Uzbekistan to this Convention, which will be sent to the relevant ministries and agencies for their opinion in the prescribed manner. At the same time, negotiations are underway on the need to assess the possible financial-economic or other consequences of the accession of the Republic of Uzbekistan to this Convention.

First of all, research was started in the field of hygiene, especially chemical analysis. The task of the researchers was to develop methods of analysis that would allow determining the concentration of waste in the air and how well they correspond to the requirements of occupational hygiene specialists.

### LIST OF REFERENCES USED

1. Abdullayev Kha Fundamentals of biogeochemistry and soil protection. Tashkent. "Teacher", 1989, 127 p.

2. Alimov T. A., Rafikov AA "Lessons from mistakes in ecology", Tashkent, "Uzbekistan", 1991.70 p.
3. Baratov P. Nature protection. T.: "Teacher", 1991, 254 p.
4. Akimova T.A., Kuzmin A.P., Haskin V.V. Ecology-M.: YUNITI, 2001.
5. <https://www.google.com>
6. <https://www.uznature.uz/uz/activity/atmosphericnumer.401>
7. Turakulova G. "The Nature and Aims of Ergonomic" "Teacher" 2022.176p