



## Current Measures for the Protection of Atmospheric Air

Uteniyazova Naubakhar  
Amanbayevna

Berdakh Karakalpak State University  
Master's student

ABSTRACT

Winds play an important role in the concentration of pollutants and their movement. A strong wind carries pollutants out of cities, disperses them in large volumes of air. As a result, pollution concentrations decrease. Under certain physical and geographical conditions, strong wind, on the contrary, in some cases leads to an increase in the concentration of dust in the air.

**Keywords:**

Atmosphere, air, waste-free production, smoke, dust, gas, ash, strong wind, pollutants.

Until recently, the most common way to combat air pollution was to remove pollutants as far as possible from the emission site, which was achieved by building tall pipes in factories and thermal power plants. Pipes emit soot, ash and gases into air streams, which carry them long distances from the emission sites and disperse them in large volumes of air. But with the increase in emissions due to the concentration of industry in relatively small areas, this method of waste disposal has become unacceptable. Therefore, on an increasingly large scale, various kinds of wastewater treatment plants are being built to reduce emissions into the atmosphere. However, all of the above methods cannot completely solve the problem of protecting the atmosphere. Filters, gas and dust collectors lead to the accumulation of huge masses of harmful substances that need to be stored somewhere. At the same time, soil, surface and groundwater are polluted. Some of the pollutants are not captured on the filters and enter the air. Therefore, new plants and thermal power plants should be surrounded by

protective buffer zones with green delights. These plantings purify the air from dust, improve its gas composition, and reduce the power of urban noise.

The main suppliers of air pollution are cities and industrial centers. Fumes, dust and gases rise to different heights by convective air currents. Depending on the climatic and meteorological processes taking place in the atmosphere at the moment, pollutants remain in the immediate vicinity of the release site and are concentrated or carried outside the city and dispersed. It is the circulatory processes of the atmosphere that lead to the fact that the problem of air pollution is increasingly becoming global.

Winds play an important role in the concentration of pollutants and their movement. A strong wind carries pollutants out of cities, disperses them in large volumes of air. As a result, pollution concentrations decrease. Under certain physical and geographical conditions, strong wind, on the contrary, in some cases leads to an increase in the concentration of dust in the air.

The degree of air pollution is affected not only by horizontal, but also by its vertical movements. During cyclones, when long, slow ascending air currents prevail, pollution is distributed over atmospheric salt of considerable height and does not form high concentrations. Rain and snow, which are common for cyclonic weather conditions, wash out some of the solid and gaseous impurities from the air. In severe thunderstorms, polluting particles are washed out from the highest altitudes, up to the stratosphere. However, rain is not able to completely clear the atmosphere even of dust. Solid particles smaller than 3-4 microns are very resistant to leaching. They are held by air molecules flowing around raindrops and can stay in the atmosphere for up to a year. With anticyclones, there is usually a temperature inversion in the surface layers of the air, which prevents the vertical movement of air. Therefore, during anticyclones, pollution accumulates directly at the earth's surface, forming significant concentrations in calm weather conditions. The absence of precipitation during anticyclones also contributes to the accumulation of pollutants in the lower layers of the atmosphere.

Motor transport supplies a significant share of atmospheric pollution. Along with the increase in the number of cars, the degree of air pollution is also increasing. This is especially acute in cities. It is possible to completely solve the problem of air pollution only by restructuring the technology of existing newly built enterprises, by organizing waste-free production. Gradually, there is an increasing number of plants operating in a closed cycle. For example, in St. Petersburg, a system for cleaning industrial emissions has been introduced with the simultaneous use of captured gases to produce sulfuric acid. In this way, emissions into the atmosphere were completely eliminated at a number of plants in the Urals, Ukraine and many other regions. The creation of waste-free production in all industries requires solving a number of complex engineering and technological tasks and huge investments. To do this, it is also necessary to form the energy production cycles

of the TPC, where the emissions of each enterprise can be raw materials for a plant cooperating with it.

But even with the transition of all enterprises to waste-free production, the problem of preserving the gas composition of the atmosphere is not solved. Every year the amount of fuel burned is growing, and with it the concentration of oxygen is growing. Sewage treatment plants do not solve this problem. The way out of this situation lies in new ways of energy production. Currently, there is a change in the change of traditional methods of electricity production with new ones. An increasing share of electricity is provided by nuclear power plants. There are plans for extensive construction of tidal stations, solar installations, and wind engines along with hydroelectric power plants. All these energy sources do not pollute the air with dust, ash substances, do not emit carbon dioxide and do not require oxygen. Thus, they radically solve the problem of atmospheric air pollution and the preservation of its gas composition.

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