



## **Air pollution and its impact on human health**

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**Abstract:** The article highlights the main sources of atmospheric pollution, its negative impact on human health, and its connection with global environmental problems. Information was also provided on the measures being taken to protect the atmosphere and their effectiveness. This article is intended for students, researchers, and the general public seeking knowledge in the fields of ecology and healthcare.

**Keywords:** Atmosphere, pollution, human health, environmental problems, toxic substances, environment, air purification, global warming.



**Аннотация:** В статье освещаются основные источники загрязнения атмосферы, его негативное влияние на здоровье человека и связь с глобальными экологическими проблемами. Также представлена информация о принимаемых мерах по охране атмосферы и их эффективности. Данная статья предназначена для студентов, исследователей и широкой общественности, желающих получить знания в области экологии и здравоохранения.

**Ключевые слова:** Атмосфера, загрязнение, здоровье человека, экологическая проблема, токсичные вещества, окружающая среда, очистка воздуха, глобальное потепление.

Air is a vital necessity for humans and all living organisms. Clean and quality air is important not only for living, but also for maintaining a healthy lifestyle. However, currently, as a result of the development of industry, the increase in the number of vehicles, the expansion of agricultural activities, and the increase in energy sources in the housing sector, the composition of the atmosphere is seriously polluted. Atmospheric pollution negatively affects human health and causes the development of many diseases. This is one of the most pressing environmental problems on a global



### 1. Main sources of atmospheric pollution

Atmospheric pollution comes from natural and artificial sources. The main artificial sources are analyzed below:

Industrial enterprises: Plants and factories in the chemical, oil and gas, metallurgical, construction, and other industries release many harmful substances (CO<sub>2</sub>, NO<sub>2</sub>, CO, CH<sub>4</sub>, dust, and aerosols) into the air. Some substances (for example, dioxins and heavy metals) are highly toxic, persist for a long time, and accumulate in the human body.

### 2. Impact of atmospheric pollution on human health

Harmful substances in the atmosphere pose a great danger to human health. Their main effects can be grouped as follows:

Harmful substance Health effects



Sulfur dioxide (SO<sub>2</sub>) Respiratory tract inflammation, bronchitis, lung disease

Nitrogen oxides (NO<sub>x</sub>) Allergic reactions, asthma attacks

Carbon dioxide (CO<sub>2</sub>) Global warm disruption of atmospheric heat balance

Carbon monoxide (CO) Decreased blood oxygen transport capacity, headache, fainting.

Heavy metals (Pb, Hg, Cd) Damage to central nervous system and internal organs

Dust and aerosols Eye and respiratory itching, lung disease, cardiovascular disease

Volatile organic compounds (VOCs) Increased risk of cancer, impairment of liver and kidney function

Also, atmospheric pollution affects not only physical health but also human mental health, exacerbating problems such as stress and depression.





### 3. Global environmental problems and the atmosphere

Atmospheric pollution is closely related to global environmental problems:

Climate change: Increased greenhouse gas emissions lead to global warming. This leads to the melting of polar ice caps, rising sea levels, and an increase in natural disasters.

Depletion of the ozone layer: Freon and other substances damage the Earth's protective layer. This allows harmful ultraviolet rays from the sun to pass freely through.

Acid rain: Sulfur and nitrogen oxides combine with water vapor, falling on the ground in the form of acid rain and harming soil, water bodies, and plant life.

### 4. Ways to combat atmospheric pollution

For the protection of the atmosphere, it is necessary to implement the following measures:

Reduction of industrial waste, installation of special filtration systems.

Development of electric transport, use of environmentally friendly fuels.

Wide implementation of renewable energy sources (solar, wind, hydropower).

Strengthening legislation and strengthening environmental control.

Formation of ecological culture and promotion of a healthy lifestyle among the population.

Accession to international environmental treaties and strengthening cooperation (for example, the Paris Agreement, the Kyoto Protocol).



Atmospheric pollution is one of the most serious environmental threats to humanity. Harmful substances in the air directly and indirectly affect human health, causing respiratory diseases, cardiovascular and nervous system diseases. Environmental problems such as global warming, ozone depletion, and acid rain are also consequences of atmospheric pollution. To overcome this problem, it is necessary to increase interstate cooperation, technological solutions, and environmental literacy of the population. A clean and healthy future can only be ensured if everyone has a strong sense of responsibility for environmental sustainability.



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