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The Impact of Polluted Air on Human Health

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ABSTRACT: One of the main reasons for the deterioration of human health is polluted air. The article examines the factors affecting air pollution in the atmosphere, as well as the consequences that a bad ecology can lead to. The article also presents methods of reducing pollution and methods of air purification from harmful emissions into the atmosphere for the human body.

KEYWORDS: air pollution, atmosphere, human health, environment, ecology, industry, emissions.

Air pollution is a serious threat to human health. Air pollution may be imperceptible to the average person, but this does not mean that it does not pose a danger to human health. Studies show that only 1 in 10 people in the world do not breathe polluted air. Due to atmospheric pollution and poor ecology, about 7 million people die every year from strokes, diabetes and diseases related to the respiratory system. Air pollution kills more people than AIDS and tuberculosis combined. [1]

In 1970, the National Air Quality Standards were established, polluted air was considered primarily as a threat to respiratory health. Over the next decades, national air quality standards expanded to include cardiovascular disease, diabetes, obesity, and reproductive, neurological, and immune system disorders.

What is Air Pollution?

The air that a person breathes is a mixture of gases, the main of which are nitrogen, oxygen and carbon dioxide. Atmospheric pollution is usually divided into natural and anthropogenic. Natural pollutants appear after forest fires, hurricanes, volcanic eruptions, natural pollutants include gases such as methane, which is released during the decomposition of organic matter in soils. Anthropogenic pollutants appear as a result of human activities. Emissions from vehicles, fuel oil and natural gas for home heating, by-products of electricity production and generation, especially coal-fired power plants, and chemical production fumes are the main sources of anthropogenic air pollution.

Air pollution from vehicle emissions is the most recognizable form of air emissions. These pollutants contain most of the elements of air pollution: lower atmosphere ozone, various forms of carbon, nitrogen oxides, sulfur oxides, volatile organic compounds, and fine particulate matter. Ozone, an atmospheric gas, is often referred to as smog when it is at ground level. It forms when pollutants emitted by cars, power plants, industries and other sources react chemically in sunlight.

Air pollution associated with the creation of glass and crystal products is also a dangerous form of air emissions. Glass factories are one of the main sources of carbon and other greenhouse gas emissions. Glass production is an energy-intensive process associated with a high consumption of materials and, as a consequence, the appearance of emissions during the preparation, processing and use of raw materials. The predominant chemical pollutants in glass production are: oxides sulfur (^Ox), nitric oxide (^Ox), in very rare cases, carbon monoxide (CO), indicating a violation of fuel combustion technology, carbon dioxide (CO2) or nitrous oxide (N2O), as well as emissions of heavy metals. [3]

Don't forget about particulate emissions. Even at the stage of batch preparation, dry raw materials emit a significant amount of dust and it is already necessary to take measures to reduce air pollution. The most effective and economically viable way to eliminate dusting is to moisten and increase the efficiency of aeration in industrial premises. The main stage in the production of glass is the melting of raw materials in a glass melting furnace at high temperatures (1150-1350°C). Exhaust gases at the outlet consist mainly of fuel or gas combustion products, which in turn are associated with chemical reactions occurring in a glass melting furnace. At this stage, there is a significant amount of emissions of nitrogen oxides due to high temperatures, the process of nitrogen oxidation and the

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decomposition of its compounds contained in the glass charge (approximately 90%, due to the almost stoichiometric effect of furnaces). [4] Prolonged exposure of the lungs to particles leads to fibrosis leading to silicosis. Dust causes ulceration of the nasal mucosa, irritates the respiratory tract and leads to conjunctivitis, and can cause skin damage. In the production of crystal, optical glasses, enamels, materials containing lead oxides are used, the dust of which is highly toxic and can accumulate in the body. Lead affects the cardiovascular and nervous systems, hematopoietic organs and the gastrointestinal tract. Arsenic oxide, which is a strong poison, is used as a clarifier in glass production. It has a detrimental effect on the human body, destroying the autonomic nervous system, leads to paralysis of the circulatory system, and affects the metabolism.

Chemical air pollution has a particularly pronounced effect on the health of the most sensitive groups of the population - children and adolescents. Under these conditions, the problems of strengthening the health of the population and improving the environment are of particular relevance. [5].

Unfortunately, at the moment, the only method to significantly reduce air pollution is low-waste technologies. Low-waste industries are already being created, in which emissions of harmful substances do not exceed the maximum permissible concentrations and the maximum permissible level of physical pollution. Also, to reduce air and environmental pollution, it is necessary to use complex waste processing.

Currently, there are a large number of methods for cleaning the air from various harmful contaminants. All cleaning methods are divided into regenerative and destructive. Regenerative cleaning methods allow the emission components to be returned to production, while destructive trans-form emission components into less harmful ones.

There is no single way that will immediately help protect a person from the problem of air pollution. This problem requires a multifaceted approach. It is necessary to use indoor air purifiers, for example, cleaning the air through ventilation systems. It is also necessary to create "green islands" in cities. The choice towards electric cars and electric transport will also help to reduce waste emissions into the atmosphere and thereby reduce the risk of deterioration in public health.

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