



THE IMPACT OF ATMOSPHERIC AIR POLLUTION ON HUMAN HEALTH

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Abstract:

Air pollution is a major global problem that has serious toxicological effects on human health and the environment. Sources of air pollution include vehicles and industrial processes, which account for the majority of air pollution. According to the World Health Organization, the six major air pollutants are ground-level ozone, carbon monoxide, sulfur oxides, nitrogen oxides, lead, and radioactive elements. Long-term and short-term exposure to toxic substances in the air has a variety of toxicological effects on humans. The risks associated with respiratory and cardiovascular diseases in particular are increasing.

Keywords: Atmosphere, air pollution, ozone layer, climate change, environmental problem, air composition, technological progress, air quality control.

Introduction

Nowadays, when people think of sources of air pollution, they usually think of big smokestacks like power plants and factories. But beyond that, it comes from all sorts of everyday, neighborhood sources.

Neighboring sources Vehicles, local businesses, heating and play a major role in air pollution, as do refrigeration equipment, wood fires, gas-powered patio and recreational equipment.

Vehicles and heavy-duty trucks This category of sources includes cars, trucks, trains, construction and agricultural machinery, snowmobiles, etc. Each of them may not pollute much, but together they emit almost half of the air pollution in Uzbekistan, especially in Tashkent, the Fergana Valley and Navoi region. The government has played the largest role to date in reducing vehicle emissions by regulating vehicle production and fuel production. Public health primarily requires vehicles and equipment to be more efficient and less polluting.





Removing lead from gasoline and reducing sulfur in diesel fuel would dramatically reduce these air pollutants. Lead (Pb) can be removed from gasoline, and this practice has been implemented in many countries. When lead is added to gasoline, it helps improve engine performance, but it also causes air pollution and health hazards. To produce unleaded gasoline, it can be replaced with other substances, such as methylcyclopropane (MTBE) or ethyl alcohol. The use of these substances reduces air pollution and helps ensure environmental safety. In this way, the production of unleaded gasoline is environmentally friendly and safer.

Diesel engine emissions are of particular concern. Diesel engines are a major powerhouse of our economy because of their power, efficiency and long life. But older diesel vehicles and equipment can produce significant amounts of harmful air pollution. An older diesel engine produces 97% more particulate pollution than newer models – the equivalent of 25-30 modern trucks.

The amount and duration of one or more pollutants in the atmosphere, such as dust, smoke, gas, fog, odor, fumes, or vapor, can be harmful to human health. The main route of exposure to air pollution is through the respiratory tract. Breathing these pollutants causes inflammation, oxidative stress, immunosuppression, and mutagenicity in cells throughout our bodies, affecting the lungs, heart, and brain, among other organs, and ultimately leading to disease.

7 million people die worldwide every year due to air pollution or shortens the average human life expectancy by 2.9 years. Based on these indicators, it is not difficult to understand why Abu Ali ibn Sina (Avicenna) said, "If there were no dust and dirt in the air, humans would live 1,000 years."

And so, While there are many toxins that can negatively impact health, the pollutants with the strongest evidence of public health concern include particulate matter (PM), carbon monoxide (CO), ozone (O₃), nitrogen dioxide (NO₂), and sulfur dioxide (SO₂). Fine particulate matter is a particularly important source of health risk because these very small particles can penetrate deep into the lungs and travel through the bloodstream to organs, causing systemic damage to tissues and cells.

Air pollution, exacerbated by climate change, is an increasingly recognized health risk, and its harmful effects are disproportionately felt by our most vulnerable populations., particularly affecting pregnant women and newborns. Epidemiological evidence suggests that air pollution is associated with a variety of adverse pregnancy and neonatal outcomes, including: highlights the important link between postpartum depression, infant mortality, low birth weight, premature birth, lung development, and respiratory health effects.





An analysis of literature sources shows that the rapid development of industry, transport, urbanization, as well as the adoption of new technologies, has led to a significant increase in emissions of harmful substances into the atmosphere that have a negative impact on humans and the environment.

So, taking the above into account to eliminate the root causes of environmental problems and to protect yourself from air pollution and reduce its negative effects, it is important to follow a number of general hygiene measures:

Personal protective measures:

1. Wear a mask – especially if you are dusty. It is useful to wear a mask in crowded places, industrial areas, or areas with heavy traffic.
2. Eye protection – dust or harmful substances in the air. If so, wearing glasses will protect your eyes.
3. Nose-tongue. Nasal irrigation – daily nasal irrigation with warm salt water clears out harmful particles in the air.

Hygiene in the living area:

4. Ventilate the room regularly – but not dusty. Not at times when there is a lot of air (for example, it is more beneficial to ventilate in the morning or evening, because at this time the air is cleaner and there are fewer harmful particles).
5. Using air purifiers is especially beneficial for people with allergies or asthma.
6. Keeping green plants indoors – for example, aloe vera, golden palm, or sansevieria – they naturally purify the air.

Nutrition and healthy lifestyle measures:

7. Eat foods rich in antioxidants – fruits and vegetables (oranges, spinach, carrots) protect the body. It makes sense.
8. Maintain strong immunity – get enough sleep, physical activity and strengthen the body by reducing stress.

Useful habits at a community level:

9. Walk or cycle more – this reduces the number of cars and protects the environment.
10. Vehicles. Proper maintenance reduces the amount of toxic gases released into the air when the car is running.
11. Planting a plant and tree care – this helps to naturally purify the air.





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