



Effect Of Smog Particles on Human Health

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Abstract

Smog is a major form of air pollution consisting of a complex mixture of particulate matter and gaseous pollutants that can adversely affect human health. Fine and ultrafine particles, particularly particulate matter with an aerodynamic diameter of 2.5 micrometers or less ($PM_{2.5}$), can penetrate deep into the respiratory system and may enter the bloodstream, contributing to systemic health effects. This survey examines the effects of smog particles on human health, with particular emphasis on respiratory, cardiovascular, neurological, and immune-system outcomes. Exposure to smog may cause irritation of the eyes, nose, and throat, coughing, breathing difficulties, wheezing, and worsening of existing respiratory conditions such as asthma and chronic obstructive pulmonary disease. Prolonged or repeated exposure has also been associated with increased risks of cardiovascular complications and other chronic health problems. Vulnerable populations, including children, older adults, pregnant women, and individuals with pre-existing respiratory or cardiovascular conditions, may experience greater health impacts. The severity of exposure depends on pollutant concentration, particle size and composition, exposure duration, meteorological conditions, and individual susceptibility. This survey highlights the importance of monitoring air quality, reducing emissions from transportation, industries, biomass burning, and other sources, and promoting public awareness of protective measures during severe pollution episodes. Understanding the health effects of smog particles is essential for developing effective air-quality policies and preventive strategies to reduce the burden of air-pollution-related disease.

Keywords: Smog, particulate matter, $PM_{2.5}$, air pollution, human health, respiratory health, cardiovascular health, air quality, pollution exposure, public health.

