

## Public Health Measures to Prevent the Adverse Impact of Air Pollution on Health

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### Abstract

Air pollution refers to the presence of substances in the surrounding atmosphere, in such concentrations that they start interfering with human health/comfort, or is injurious to vegetation/animals, or plays a significant role in environmental degradation. The recent estimates released by the World Health Organization have raised serious concerns, and thus air pollution has been now acknowledged as the world's largest single environmental health risk. Acknowledging the impact of air pollution on different dimensions of health, it is of prime importance to reduce extent of air pollution so that lives of millions can be saved in future. In conclusion, considering the number of deaths attributed to air pollution and its associated short and long-term impact on human health and environment, it is the need of the hour to take a concerted effort to reduce the magnitude of air pollution worldwide.

**Keywords:** Air pollution; Health; Environment

### Introduction

Air pollution refers to the presence of substances (like gases, mixture of gases and particulate matter) in the surrounding atmosphere, which are generated by the activities of humans, in such concentrations that they start interfering with human health/comfort, or is injurious to vegetation/animals, or plays a significant role in environmental degradation [1].

### Impact on Health

The recent estimates released by the World Health Organization has raised serious concerns as in the year 2012 alone, almost 7 million people died (4.3 million – household air pollution +3.7 million – ambient air pollution), owing to their exposure to air pollution, with maximum deaths being reported in the Western Pacific and South East Asian regions [2]. These estimates are alarming as the number of deaths has almost doubled in contrast to the past estimates, and thus air pollution has been now acknowledged as the world's largest single environmental health risk [2,3]. Furthermore, on a global scale around 1600 cities spread across 91 nations are reporting higher air pollution levels [4].

### Household (Indoor) Air Pollution

Around 3 billion people worldwide, most of whom are from low/middle income nations, are still using biomass (wood, animal dung and crop waste) and coal for different purposes [5]. These procedures have resulted in extremely high levels of household air pollutants like particulate matter and other poisonous gases [5]. In-fact, premature deaths have been reported both in children (pneumonia), and in adults (stroke/myocardial ischemia/chronic obstructive pulmonary disease/lung cancer) because of the household air pollutants [1,5-8].

### Ambient (outdoor) Air Pollution

Out of the 3.7 million deaths attributed to exposure to ambient air pollution in the year 2012, almost 88% of the casualties were again from the low/middle income nations [9]. Different air pollutants like particulate matter (asthma exacerbations, and asthma hospitalizations), ozone (plays a major role in the pathophysiology of asthma), nitrogen and sulfur dioxide (associated with development of broncho constriction,

impaired lung function, lung inflammation and respiratory tract irritation) have been associated with variable adverse effects to both human (increased medical expenditure, sickness absenteeism, disability, impact on quality of life, etc.) and their surrounding environment [1,9-12].

### Recommended Public Health Measures

Acknowledging the impact of air pollution on different dimensions of health, it is of prime importance to reduce extent of air pollution so that lives of millions can be saved in future [2,9,11]. Although, effective policies and strategies are existing, nevertheless, their implementation on a large scale in a uniform manner is lagging [2]. Thus, it is the responsibility of the public health authorities of individual cities to adopt and implement local measures to improve the air quality [5,9]. In-fact, definitive evidence is available to suggest that cities like Copenhagen and Bogotá, have significantly improved the quality of air by encouraging urban public transport, and activities like walking or cycling among the residents [13].

A wide range of measures such as ensuring that houses are energy efficient [13] developing a mechanism to maintain household energy database [5] communicating standardized exposure limits to air pollutants to various nations [9], well-planned development of cities [9], good quality public transport options [13], appropriate measures to handle air pollutants (in industries, for vehicles, during power generation, waste disposal, etc.) [1,14], facilitating operation of power plants that use clean and renewable fuels [13], enabling development of safer roads [3], formulating holistic legislative measures [1], providing

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support to the nations which are not yet engaged in systematic air quality monitoring [3,14], enhancing international collaboration by developing a global platform for monitoring air quality [2-4], extending support to various nations to strengthen the existing efforts and to share the information on various successful approaches or other recent developments [15,16] and fostering research work to establish the impact of various air pollutants on health [5,16] can be implemented to reduce the aftermaths of air pollution.

## Conclusion

In conclusion, considering the number of deaths attributed to air pollution and its associated short and long-term impact on human health and environment, it is the need of the hour to take a concerted effort to reduce the magnitude of air pollution worldwide.

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