Review on harmful effects of air pollution

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Abstract
Man is causing all round damage to atmosphere, water, land, to the various elements of environment and to the ecosystem itself. Our atmosphere on global as well as regional scale is heavily polluted. Air pollution occurs when gases, dust particles, fumes (or smoke) or odour are introduced into the atmosphere in a way that makes it harmful to humans, animals and plant. Air pollution threatens the health of humans and other living beings in our planet. It creates smog, acid rain, causes cancer, respiratory diseases, reduces the ozone layer and contributes to global warming. In this review paper we discuss different types of air pollution and impacts of air pollution. Among all causes having a negative effect on air pollution shows the highest immediate risks but, at the same time, it can be reduced through viable solutions.

Keywords: Clean air.

Introduction
Clean air is the foremost requirement to sustain healthy lives of humankind and those of the supporting ecosystems which in return affect the human wellbeing. Release of various gaseous emissions and particulate matter has been on the rise due to rampant industrialized growth. Air pollution causes the deaths of around 7 million people worldwide each year and is the world's largest single environmental health risk. A substance in the air that can be adverse to humans and the environment is known as an air pollutant. Pollutants can be in the form of solid particles, liquid droplets, or gases. Pollutants can be classified as primary or secondary. Usually, primary pollutants are directly produced from a process, such as the carbon monoxide gas from a motor vehicle exhaust or sulphur dioxide released from factories. Secondary pollutants are not emitted directly. Rather, they form in the air when primary pollutants react or interact. An important example of a secondary pollutant is ground level ozone – one of the many secondary pollutants that make up photochemical smog. Some pollutants may be both primary and secondary: that is, they are both emitted directly and formed from other primary pollutants. Air pollution.[1-11] is the introduction of chemicals, dust, smoke, particulates or biological materials into atmosphere that cause discomfort, disease, or death to living organisms. Individual reactions to air pollutants depend on the type of pollutant a person is exposed to, the degree of exposure and individual health status.

Some Facts about Air Pollution
Air pollution affects kids more than adults due to higher concentrations of polluted air in their immune body systems. India is the country with the worst air quality in the world. In large cities, over 80% of fatal pollutants that cause lung damage come from cars, buses, motorcycles and other vehicles on the road. According to the World Health Organization, there are as many deaths (1.3 million per year) in the world due to air pollution as there are deaths due to car accidents. The largest cause of air pollution in India is road transportation with over 5,000 people dying each year from lung cancer and heart attacks caused by vehicle exhaust fumes.

Causes for Air Pollution
Air pollution can result from both human and natural actions. Natural events that pollute the air include forest fires, volcanic eruptions, wind erosion, pollen dispersal, evaporation of organic compounds and natural radioactivity. Sources of air pollution refer to the various locations, activities or factors which are responsible for the releasing of pollutants into the atmosphere. Stationary Sources include smokestacks of power plants manufacturing factories and fuel-burning heating devices. In developing countries, traditional biomass burning is the major source of air pollutants; traditional biomass includes wood, crop waste and dung. Waste deposition in landfills, which generate methane. Methane is highly flammable and may form explosive mixtures with air. Dust from natural sources, Volcanic activity which produce sulphur, chlorine, and ash particulates. Methane emitted by the digestion of food by animals, for example cattle. A lack of ventilation indoors concentrates air pollution where people often spend the majority of their time. Paint and solvents give off volatile organic compounds as they dry. Lead paint can degenerate into dust and be inhaled. Intentional air pollution is introduced with the use of air fresheners, incense, and other scented items. Controlled wood fires in cook stoves and fireplaces can add significant amounts of harmful

smoke particulates into the air, inside and out. Indoor pollution fatalities may be caused by using pesticides and other chemical sprays indoors without proper ventilation. Release of toxic gases through advertent and inadvertent actions of man causes environmental hazards which destroy all types of life forms in the affected areas. The Bhopal Gas Tragedy (December 3-4, 1984, India) is an example of disastrous effects of modern industrialization. Acid rains, urban smogs, nuclear holocaust, etc., are the other forms of environment hazards emanating from industrialization. Increasing industrial expansion is responsible for the release of enormous quantities of pollutants (e.g.) ions of chlorine, sulphate, bicarbonate, nitrate, sodium, magnesium, phosphate, through sewage effluents into the rivers and the lakes and thus for contaminating the water. Release of several gases, smokes, ashes and other aerosols from the chimneys of the factories adversely affects the environment in a number of ways. The burning of hydrocarbon fuels (coal and petroleum) has increased the concentration of $C0_2$ in the atmosphere and thus has changed the natural gaseous composition of the atmosphere. The increase in the construction of $C0_2$ content of the atmosphere may change global radiation and heat balance by increasing the level of sensible heat in the atmosphere because $C0_2$ intensifies the greenhouse effects of the atmosphere as $C0_2$ allows the solar radiation to pass through the atmosphere and reach the earth's surface but stops the outgoing long wave terrestrial radiation from escaping to the space release of chlorofluoro carbon in the atmosphere causes depletion of ozone layer.

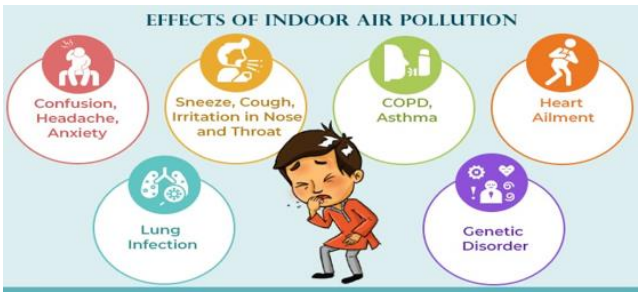
"Stationary Sources" include smoke stacks of power plants, manufacturing

- Waste deposition in landfills, which generate methane. Methane is highly

Effects of Air Pollution

i) Health Effects

Air pollution is a significant risk factor for multiple health conditions including respiratory infections, heart disease, and lung cancer. Around the world, children living in cities with high exposure to air pollutants are at increased risk of developing asthma, pneumonia and other respiratory infections. Because children are more susceptible to the dangers of air pollution. Air pollution is a significant risk factor for multiple health conditions including respiratory infections, heart disease, and lung cancer, according to the WHO. The health effects caused by air pollution may include difficulty in breathing, wheezing, coughing, asthma and aggravation of existing respiratory and cardiac conditions. These effects can result in increased medication use, increased doctor or emergency room visits, more hospital admissions and premature death. The human health effects of poor air quality are far reaching, but principally affect the body's respiratory and cardiovascular system.



ii) Environmental Effects

Poisonous and toxic air pollutants can form acid rain. It can also form dangerous ground level ozone. These destroy trees, crops, farms, animals and continue to make water bodies harmful to humans and animals that live and depend on water.

Measures to control air pollution

Solution efforts on pollution are always a big problem. This is why prevention interventions are always a better way of controlling air pollution. These prevention methods can either come from government laws or by individual actions. In many big cities, monitoring equipments have been installed at many points in the city. The following items such as mechanical collectors, electrostatic precipitators, baghouse filters and wet scrubber are commonly used as pollution control devices by industry or transportation devices. They can either destroy contaminants or remove them from an exhaust stream before it is emitted into the atmosphere.

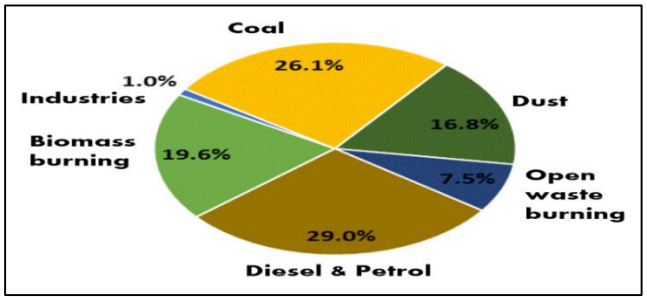
Individual Level Prevention

1. Encourage your family to use the bus, train or bike when commuting. If we all do this, there will be fewer cars on road and less fumes.
2. Use energy (light, water, boiler, kettle and fire woods) wisely. This is because lots of fossil fuels are burned to generate electricity, and so if we can cut down the use, we will also cut down the amount of pollution we create.
3. Recycle and re-use things. This will minimize the dependence of producing new things. Remember manufacturing industries create a lot of pollution, so if we can re-use things like shopping plastic bags, clothing, paper and bottles, it can help.

Air pollution case study in New Delhi

In New Delhi, air pollution is referred to as the silent and largest killer in India. According to the WHO, New Delhi has the highest death rate from asthma and chronic respiratory ailments in the country, as air pollution does irreversible lung damage to more than 50 per cent of children. Things went out of the hands when the Supreme Court of India had to intervene on November 25, 2019. The Supreme Court Justice Arun Mishra compared Delhi situation to living in hell and said that it would have been better to get explosives and kill everyone. Delhi Air Quality Index generally hovers from moderate to worse. It is rarely satisfactory and never 'good'. During December to March (during winter) when Sun is hard to spot, it is the smog that affects the visibility to a great

extent, and the air quality reduces to very poor, severe and hazardous. From October to December, the pollution level worsens due to stubble burning, dust storms, vehicle pollution and gradually changing weather.



Other than vehicles, the great Delhi pollution is also caused by animal agriculture or stubble burning. Agriculture is the main occupation in adjacent states of Delhi. The farmers burn their crops to prepare it for next harvest, and the smoke makes way to Delhi, engulfing it in the thick layer of smoke. The air quality, which is already in the worse shape, gets terrible.

Conclusion

In this industrial age, air pollution cannot be eliminated completely, but steps can be taken to reduce it. The government has developed, and continues to develop, guidelines for air quality and ordinances to restrict emissions in an effort to control air pollution. On an individual level, we can reduce our contribution to the pollution problem by carpooling or using public transportation. Additionally, buying energy-efficient light bulbs and appliances or otherwise reducing our electricity use will reduce the pollutants released in the production of electricity, which creates the majority of industrial air pollution. Air pollution can be prevented only if individuals and businesses stop using toxic substances that cause air pollution in the first place. This would require the cessation of all fossil fuel-burning processes, from industrial manufacturing to home use of air conditioners. This is an unlikely scenario at this time. However, we have to make rules which set stringent regulations on industrial and power supply manufacturing and handling. The regulations are to be designed to further reduce harmful emissions into the Earth's atmosphere.

Conflicts of Interest

All contributing authors declare no conflicts of interest.

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None.

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