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Air Pollution: The present day dilemma

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Abstract: With the growing number of vehicles and the ever increasing demands of energy of human race, the air pollution has increased manifolds. This has caused several health hazards. Air pollution is one of the biggest threats for the environment and affects everyone: humans, animals, crops, cities, forests, aquatic ecosystems The human health effects of poor air quality are far reaching, but principally affect the body's respiratory system and the cardiovascular system. The most common sources of air pollution include particulates, ozone, nitrogen dioxide, and sulphur dioxide. This paper is an attempt to highlight the causes of air pollution and the perils associated with it.
Key words: Air Pollution, Causes of air pollution, effects of air pollution

I. INTRODUCTION

The human race is dependent on the atmospheric air to breathe and to be able to survive on this planet. But our growing energy needs and the burgeoning traffic on our roads has polluted the air. Such is the level of air pollution that in some cities people are forced to wear masks to avoid health problems. Nobody could have thought of the oxygen being sold in small cylinders to help people to breathe clean air.

Talking on simpler terms air pollution may be defined as deterioration in quality of air due to presence of unwanted substances be it be the particulate matter, NOx, SOx and increased amounts of Carbon dioxide. Air pollution refers to the release of pollutants into the air that are detrimental to human health and the planet as a whole. Air pollution can be defined as an alteration of air quality that can be characterized by measurements of chemical, biological or physical pollutants in the air. Therefore, air pollution means the undesirable presence of impurities or the abnormal rise in the proportion of some constituents of the atmosphere. It can be classified in 2 sections: visible and invisible air pollution.

II. CAUSES OF AIR POLLUTION

The chief causes of air pollution are man- made. These include:

- Unmindful burning of fossil fuel to fulfill our energy requirements.
- Heavy emissions of toxic fumes from industries
- Agricultural activities like spraying of pesticides and insecticides
- Waste production such as generation of methane from the garbage dumps and landfills.

III. EFFECTS OF AIR POLLUTION

It is almost impossible to quantify and describe the ill effects of air pollution caused by all causes listed above.

Air pollution causes smog and soot. These two are the most prevalent types of air pollution. Smog, or "ground-level ozone," as it is more commonly called, occurs when emissions from combusting fossil fuels react with sunlight. Soot, or "particulate matter," is made up of tiny particles of chemicals, soil, smoke, dust, or allergens, in the form of gas or solids, that are carried in the air. Smog leads to severe loss of visibility and hampers the traffic movement. The sources of smog and soot are similar. Both come from cars and trucks, factories, power plants, incinerators, engines—anything that combusts fossil fuels such as coal, gas, or natural gas.. The tiniest airborne particles in soot whether they're in the form of gas or solids are especially dangerous because they can penetrate the lungs and bloodstream and worsen bronchitis, lead to heart attacks, and even hasten death.

Smog can irritate the eyes and throat and also damage the lungs especially of people who work or exercise outside, children, and senior citizens. It's even worse for people who have asthma or allergies these extra pollutants only intensify their symptoms and can trigger asthma attacks.

3.1 Hazardous air pollutants

These are either deadly or have severe health risks even in small amounts. Almost 200 are regulated by law; some of the most common are mercury, lead, dioxins, and benzene. These are also most often emitted during gas or coal combustion, incinerating, or in the case of benzene, found in gasoline. Benzene, classified as a carcinogen, can cause eye, skin, and lung irritation in the short term and blood disorders in the long term. Dioxins, more typically found in food but also present in small amounts in the air, can affect the liver in the short term and harm the

immune, nervous, and endocrine systems, as well as reproductive functions. Lead in large amounts can damage children's brains and kidneys, and even in small amounts it can affect children's IQ and ability to learn. Mercury affects the central nervous system.

Polycyclic aromatic hydrocarbons, or PAHs, are toxic components of traffic exhaust and wildfire smoke. In large amounts, they have been linked to eye and lung irritation, blood and liver issues, and even cancer. In one recent study, the children of mothers who'd had higher PAH exposure during pregnancy had slower brain processing speeds and worse symptoms of ADHD.

3.2 Greenhouse gases

By trapping the earth's heat in the atmosphere, greenhouse gases lead to warmer temperatures and all the hallmarks of climate change: rising sea levels, more extreme weather, heat-related deaths, and increasing transmission of infectious diseases like Lyme. According to a 2014 study, carbon dioxide was responsible for 81 percent of the total greenhouse gas emissions, and methane made up 11 percent. Carbon dioxide comes from combusting fossil fuels, and methane comes from natural and industrial sources, including the large amounts that are released during oil and gas drilling.We emit far larger amounts of carbon dioxide, but methane is significantly more potent, so it's also very destructive. Another class of greenhouse gases, hydrofluorocarbons (HFCs), are thousands of times more powerful than carbon dioxide in their ability to trap heat. In October 2016, more than 140 countries reached an agreement to reduce the use of these chemicals which are used in air conditioners and refrigerators and find greener alternatives over time.

3.3 Pollen and mold

Mold and allergens from trees, weeds, and grass are also carried in the air, are exacerbated by climate change, and can be hazardous to health. They are not regulated by the government and are less directly connected to human actions, but they can be considered air pollution. When homes, schools, or businesses get water damage, mold can grow and can produce allergenic airborne pollutants. Mold exposure can precipitate asthma attacks or an allergic response, and some molds can even produce toxins that would be dangerous for anyone to inhale.

Pollen allergies are worsening because of climate change. Lab and field studies are showing that the more carbon dioxide pollen-producing plants especially ragweed is grown in, the bigger they grow and the more pollen they produce. Climate change also extends the pollen production season, and some studies are beginning to suggest that ragweed pollen itself might be becoming a more potent allergen. That means more people will suffer runny noses, fevers, itchy eyes, and other symptoms.

Air pollution has a major impact on the process of plant evolution by preventing photosynthesis in many cases, with serious consequences for the purification of the air we breathe. It also contributes to the formation of acid rain, atmospheric precipitations in the form of rain, frost, snow or fog, which are released during the combustion of fossil fuels and transformed by contact with water steam in the atmosphere.

IV. THE SOLUTIONS

The solution to this mammoth problem is simple but adaptation of same is difficult. The simple steps include:

- Adoption of renewable and clean sources of energy. This would include using less of fossil fuel and more of renewable sources such as Sun, Wind, Ocean, Geothermal etc.
- Adopting energy conservation and energy efficiency measures. This involves using lesser amount of energy to meet our requirements and also using appliances which are energy efficient. Star rated appliances having high energy efficacy ratio could be used.
- Eco friendly transportation. This involves more use of public transport. Also this implies that we use more of hybrid vehicles or vehicles powered by CNG.
- Green Buildings. This concept is fast catching up. Herein the building is so constructed so as to have minimal energy requirements. Use of sunlight for lighting is encouraged.

V. CONCLUSION

Air pollution problem is a mammoth problem. Small steps can lead to bigger change. It is pertinent for us to reduce the air pollution levels so that we may live a healthy life.

VI. REFERENCES

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