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Air Pollution is a Familiar Environmental Health Hazard

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ABSTRACT: Air pollution is a familiar environmental health hazard. We know what we're looking at when brown haze settles over a city, exhaust billows across a busy highway, or a plume rises from a smokestack. Some air pollution is not seen, but its pungent smell alerts you. Air pollution is a familiar environmental health hazard. We know what we're looking at when brown haze settles over a city, exhaust billows across a busy highway, or a plume rises from a smokestack. Some air pollution is not seen, but its pungent smell alerts you. The present paper aims to estimate and communicate the health impact of exposure to air pollution or changes in air pollution in different socioeconomic, environmental, and policy circumstances.

KEYWORDS: Air pollution, environment, health impact, gases and management system

Objectives:

- ✓ To study impact of Air pollution on health
- ✓ To Identify the better management practices that protect the environment

I. INTRODUCTION

Air pollution is a major environmental health hazard with far-reaching consequences, impacting respiratory, cardiovascular, and neurological systems, as well as reproductive health and increasing the risk of various diseases. It affects people of all ages, with vulnerable populations like children, the elderly, and those with pre-existing conditions being particularly susceptible. A health hazard can be defined as a source of risk to human health or wellbeing (Department of Health, 2006). A health risk assessment is the scientific evaluation of potential adverse health effects resulting from human exposure to a particular hazard. In the context of this publication, the health hazard of interest is air pollution.

Air pollution is the presence of one or more contaminants in the atmosphere, such as dust, fumes, gas, mist, odour, smoke or vapor, in quantities and duration that can be injurious to human health. The main pathway of exposure from air pollution is through the respiratory tract. Breathing in these pollutants leads to inflammation, oxidative stress, immunosuppressant, and mutagen city in cells throughout our body, impacting the lungs, heart, brain among other organs and ultimately leading to disease. Almost every organ in the body can be impacted by air pollution. Due to their smallsize, some air pollutants areableto penetrateinto thebloodstreamviathelungs and circulate throughout the entir e body leading to systemic inflammation and carcinogenicity.

Health problems in children and adults can occur because of both short- and long-term exposure to air pollutants. The levels and duration of exposure that can be considered 'safe' vary by pollutant, as well as the related disease outcomes. For some pollutants, there are no thresholds below which adverse effects do not occur.

Exposure to high levels of particulate matter, for example, can lead to reduced lung function, respiratory infections and aggravated asthma from short-term exposure. Whereas long-term or chronic exposure to fine particulate matter increases a person's risk for diseases with a longer onset, like some no communicable diseases including stroke, heart disease, chronic obstructive pulmonary disease and cancer.

The health impacts from exposure to ambient air pollution or household air pollution are dependent on the types and concentrations of the pollutants in the air pollution mixture to which an individual is exposed. However, the health risks and disease pathways between ambient and household air pollution exposure are often similar, due to their similar composition. Fine particulate matter for example is a common and critical pollutant of both ambient and household air pollution leading to negative health impacts.

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Additional safety risks are associated with many of the fuels and technologies used in the home emitting air pollution. These include burns and poisonings (from kerosene ingestion), as well as physical injury related to fuel collection, including musculoskeletal damage, violence, and animal bites.

It is important to note that the death and disability estimates attributed to air pollution do not account for all health outcomes associated with air pollution. WHO estimates are likely conservative as only health outcomes for which there is strong certainty in the epidemiological evidence are included (i.e. stroke, ischemic heart disease, chronic obstructive pulmonary disease, pneumonia, and lung cancer).

Desert dust episodes contribute directly to air pollution by increasing particulate matter concentrations and in some regions is an important sometimes main source. Desert dust episodes – or sand and dust storms constitute a growing public health, mainly for respiratory diseases, and environmental concern for many areas of the world. It also has an important transboundary component, which is important to take into account when addressing it at regional and international level.

II. IMMEDIATE EFFECTS

Some health effects may show up shortly after a single exposure or repeated exposures to a pollutant. These include irritation of the eyes, nose, and throat, headaches, dizziness, and fatigue. Such immediate effects are usually short-term and treatable. Sometimes the treatment is simply eliminating the person's exposure to the source of the pollution, if it can be identified. Soon after exposure to some indoor air pollutants, symptoms of some diseases such as asthma may show up, be aggravated or worsened.

The likelihood of immediate reactions to indoor air pollutants depends on several factors including age and preexisting medical conditions. In some cases, whether a person reacts to a pollutant depends on individual sensitivity, which varies tremendously from person to person. Some people can become sensitized to biological or chemical pollutants after repeated or high level exposures.

Certain immediate effects are similar to those from colds or other viral diseases, so it is often difficult to determine if the symptoms are a result of exposure to indoor air pollution. For this reason, it is important to pay attention to the time and place symptoms occur. If the symptoms fade or go away when a person is away from the area, for example, an effort should be made to identify indoor air sources that may be possible causes. Some effects may be made worse by an inadequate supply of outdoor air coming indoors or from the heating, cooling or humidity conditions prevalent indoors.

III. LONG-TERM EFFECTS

Other health effects may show up either years after exposure has occurred or only after long or repeated periods of exposure. These effects, which include some respiratory diseases, heart disease and cancer, can be severely debilitating or fatal. It is prudent to try to improve the indoor air quality in your home even if symptoms are not noticeable.

While pollutants commonly found in indoor air can cause many harmful effects, there is considerable uncertainty about what concentrations or periods of exposure are necessary to produce specific health problems. People also react very differently to exposure to indoor air pollutants. Further research is needed to better understand which health effects occur after exposure to the average pollutant concentrations found in homes and which occurs from the higher concentrations that occur for short periods of time.

Pollutant Sources

There are many sources of indoor air pollution. These can include:

- Fuel-burning combustion appliances
- Tobacco products
- Building materials and furnishings as diverse as:
    - Deteriorated asbestos-containing insulation
    - Newly installed flooring, upholstery or carpet
    - Cabinetry or furniture made of certain pressed wood products
- Products for household cleaning and maintenance, personal care, or hobbies
- Central heating and cooling systems and humidification devices

- Excess moisture
- Outdoor sources such as:
    - Radon
    - Pesticides
    - Outdoor air pollution.

Some sources, such as building materials, furnishings and products like air fresheners, can release pollutants more or less continuously. Other sources, related to activities like smoking, cleaning, redecorating or doing hobbies release pollutants intermittently. Unvented or malfunctioning appliances or improperly used products can release higher and sometimes dangerous levels of pollutants indoors.

A mixture of gasses and particles has most of the elements of human-made air pollution: ground-level ozone, various forms of carbon, nitrogen oxides, sulfur oxides, volatile organic compounds, polycyclic aromatic hydrocarbons, and fine particulate matter. **Ozone**, an atmospheric gas, is often called smog when at ground level. It is created when pollutants emitted by cars, power plants, industrial boilers, refineries, and other sources chemically react in the presence of sunlight.

Noxious gases, which include carbon dioxide, carbon monoxide, nitrogen oxides and sulfur oxides are components of motor vehicle emissions and byproducts of industrial processes.

Management practices to start

Management practices should be initiated before a dredging project begins, in the planning and design phase and should include:

- developing contracts and project management controls,
- using pre-qualification tenders to short-list qualified bidders,
- selecting a contractor based on best value,
- proposing performance standards to allow flexibility, instead of specifying methods, which can limit innovations, and
- Preparing a project and site-specific environmental and construction monitoring programme.

IV. METHODOLOGY

This study used secondary data for Air pollution, environment and health impact from which include review of existing literature from already published studies and reports that was easily accessed through online journals and libraries.

Result & Discussion

Along with harming human health, air pollution can cause a variety of environmental effects: Acid rain is precipitation containing harmful amounts of nitric and sulfuric acids. These acids are formed primarily by nitrogen oxides and sulfur oxides released into the atmosphere when fossil fuels are burned. These acids fall to the Earth either as wet precipitation (rain, snow, or fog) or dry precipitation (gas and particulates). Some are carried by the wind, sometimes hundreds of miles. In the environment, acid rain damages trees and causes soils and water bodies to acidify, making the water unsuitable for some fish and other wildlife. It also speeds the decay of buildings, statues, and sculptures that are part of our national heritage. Acid rain has damaged Massachusetts lakes, ponds, rivers, and soils, leading to damaged wildlife and forests by Whittaker, A. (1998).

It is a condition in a water body where high concentrations of nutrients (such as nitrogen) stimulate blooms of algae, which in turn can cause fish kills and loss of plant and animal diversity. Although eutrophication is a natural process in the aging of lakes and some estuaries, human activities can greatly accelerate eutrophication by increasing the rate at which nutrients enter aquatic ecosystems. Air emissions of nitrogen oxides from power plants, cars, trucks, and other sources contribute to the amount of nitrogen entering aquatic ecosystems. Haze is caused when sunlight encounters tiny pollution particles in the air. Haze obscures the clarity, color, texture, and form of what we see. Some haze-causing pollutants (mostly fine particles) are directly emitted to the atmosphere by sources such as power plants, industrial facilities, trucks and automobiles, and construction activities. Others are formed when gases emitted to the air (such as sulfur dioxide and nitrogen oxides) form particles as they are carried downwind.

Toxic pollutants in the air, or deposited on soils or surface waters, can impact wildlife in a number of ways. Like humans, animals can experience health problems if they are exposed to sufficient concentrations of air toxics over time.

Studies show that air toxics are contributing to birth defects, reproductive failure, and disease in animals. Persistent toxic air pollutants (those that break down slowly in the environment) are of particular concern in aquatic ecosystems. These pollutants accumulate in sediments and may biomagnify in tissues of animals at the top of the food chain to concentrations many times higher than in the water or air. Ozone is a gas that occurs both at ground-level and in the Earth's upper atmosphere, known as the stratosphere by Whittaker, A. (1998). At ground level, ozone is a pollutant that can harm human health. In the stratosphere, however, ozone forms a layer that protects life on earth from the sun's harmful ultraviolet (UV) rays. But this "good" ozone is gradually being destroyed by man-made chemicals referred to as ozone-depleting substances, including chlorofluorocarbons, hydro chlorofluorocarbons, and halons. These substances were formerly used and sometimes still are used in coolants, foaming agents, fire extinguishers, solvents, pesticides, and aerosol propellants. Thinning of the protective ozone layer can cause increased amounts of UV radiation to reach the Earth, which can lead to more cases of skin cancer, cataracts, and impaired immune systems. UV can also damage sensitive crops, such as soybeans, and reduce crop yields.

Air pollution can damage crops and trees in a variety of ways. Ground-level ozone can lead to reductions in agricultural crop and commercial forest yields, reduced growth and survivability of tree seedlings, and increased plant susceptibility to disease, pests and other environmental stresses (such as harsh weather). As described above, crop and forest damage can also result from acid rain and from increased UV radiation caused by ozone depletion.

Fig.1.Health risk of air pollution- National center

The Earth's atmosphere contains a delicate balance of naturally occurring gases that trap some of the sun's heat near the Earth's surface. This "greenhouse effect" keeps the Earth's temperature stable. Unfortunately, evidence is mounting that humans have disturbed this natural balance by producing large amounts of some of these greenhouse gases, including carbon dioxide and methane. As a result, the Earth's atmosphere appears to be trapping more of the sun's heat, causing the Earth's average temperature to raise - a phenomenon known as global warming. Many scientists believe that global warming could have significant impacts on human health, agriculture, water resources, forests, wildlife, and coastal areas.

V. CONCLUSION

Air pollution exposure is associated with oxidative stress and inflammation in human cells, which may lay a foundation for chronic diseases and cancer. In 2013, the International Agency for Research on Cancer of the World Health Organization (WHO) classified air pollution as a human carcinogen. Air pollution is a mix of hazardous substances from both human-made and natural sources.

Vehicle emissions, fuel oils and natural gas to heat homes, by-products of manufacturing and power generation, particularly coal-fueled power plants, and fumes from chemical production are the primary sources of human-made air pollution. Nature releases hazardous substances into the air, such as smoke from wildfires, which are often caused by people; ash and gases from volcanic eruptions; and gases, like methane, which are emitted from decomposing organic matter in soils. It is a major threat to global health and prosperity. Air pollution, in all forms, is responsible for more than 6.5 million deaths each year globally, a number that has increased over the past two decades.

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Effective environmental management practices are crucial for minimizing pollution, conserving resources, and promoting sustainability. This involves implementing strategies that reduce waste, minimize emissions, and utilize resources efficiently. Organizations can achieve this through various approaches, including preventative measures, cleaner production technologies, and robust environmental management systems.

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