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INTERNATIONAL JOURNAL OF MULTIDISCIPLINARY EDUCATIONAL RESEARCH
ISSN:2277-7881(Print); IMPACT FACTOR :9.014(2025); IC VALUE:5.16; ISI VALUE:2.286
PEER REVIEWED AND REFEREED INTERNATIONAL JOURNAL
(Fulfilled Suggests Parametres of UGC by IJMER)
Volume:14, Issue:9(2), September, 2025
Scopus Review ID: A2B96D3ACF3FEA2A
Article Received: Reviewed : Accepted
Publisher: Sucharitha Publication, India
Online Copy of Article Publication Available : www.ijmer.in

AIR POLLUTION: A GROWING CONCERN

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"We have to live on the earth. We cannot go and live on the planets. Let us keep the earth clean. Let us keep the atmosphere peaceful." **-V.D. Kulshreshtha**

Meaning of Air pollution:-

"Air Pollution" means any solid, liquid or gaseous substance , including noise present in the atmosphere in such concentration as may be or tend to be injurious to human being or other living creatures or plants or property or environment and or the presence in the atmosphere of any air pollutant.[(Section 2(a) of Air (Prevention and Control Act, 1981)]. Air Pollution is usually associated with industrial growth and urbanization. However, in many town and cities of India domestic sources which burn coal, cow dung, firewood or trash can be a significant source pollution particularly under conditions of stagnant air in winter months. Fortunately, Indian coal is low sulphur content, the number of automobiles is relatively small and the rainy season is an effective scruple for mitigating air pollution. Despite these advantages, problems of air pollution are becoming severe in major cities like Calcutta, Bombay and Delhi. A high background dust level during certain times of the year aggravates the problem. Studies conducted by the National Environmental Engineering Research Institute(NEER) confirm that levels of sulphur dioxide and particulate matter in certain major cities exceed permissible limits set by organizations like WHO. The high incidents of problems such as asthma, bronchitis, cough breathlessness, sneezing and nasal blocksaong people living the Chebur area in Bombay is attributed to constant exposure to the high level s of air pollutants. Studies by the Banaras Hindu University and the tamil Nadu Agriculture University have established that e adverse impact of Industrial and transportation emissions on crop productivity. Fear has been expressed about the effect of power plant and refinery emissions on target ranging from human lungs to ancient monuments. Control of pollution under the Air Act has distinguishing features. The State Government ay declare air pollution control areas" in such annerasay be prescribed," The consent from the Board was adepreeptory before establishing or operating an industrial plant in this area. No one is allowed to eit any air pollutant in excess of standard as laid down by the board.

Air pollution is a major environmental issue that affects the health and well-being of millions of people around the world. It is a complex problem that involves the emission of pollutants into the air, which can come from a variety of sources, including industrial activities, vehicle emissions, and natural events like volcanic eruptions.

One of the main causes of air pollution is the burning of fossil fuels, such as coal, oil, and gas, which releases pollutants like particulate matter, nitrogen oxides, and sulfur dioxide into the air. These pollutants can cause a range of health problems, including respiratory diseases like asthma and lung cancer, as well as cardiovascular disease and other conditions.

Another significant source of air pollution is vehicle emissions. Cars, trucks, and other vehicles release pollutants like particulate matter, nitrogen oxides, and volatile organic compounds into the air, which can contribute to poor air quality and negative health effects. In addition, industrial activities like mining, smelting, and refining can also release large amounts of pollutants into the air.

Air pollution is not just a local issue, but a global problem that requires international cooperation and action. The effects of air pollution can be seen in the form of acid rain, haze, and smog, which can damage crops, buildings, and other

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infrastructure. Moreover, air pollution can also exacerbate climate change by releasing greenhouse gases like carbon dioxide and methane into the atmosphere.

To address the issue of air pollution, governments, businesses, and individuals must work together to reduce emissions and promote cleaner technologies. Some strategies for reducing air pollution include:

1. Transitioning to cleaner energy sources like solar and wind power

2. Improving fuel efficiency and emissions standards for vehicles

3. Implementing policies to reduce industrial emissions

4. Promoting sustainable land use practices to reduce deforestation and habitat destruction

5. Encouraging individuals to adopt environmentally friendly behaviors, such as using public transportation or carpooling.

Industrial Air Pollution:

Industrial air pollution refers to the release of pollutants into the air from industrial activities, such as manufacturing, mining, and energy production. These pollutants can come from a variety of sources, including:

1. Fossil fuel combustion: Burning fossil fuels, such as coal, oil, and gas, for energy releases pollutants like particulate matter, nitrogen oxides, and sulfur dioxide.

2. Industrial processes: Various industrial processes, such as smelting, refining, and chemical manufacturing, can release pollutants like particulate matter, volatile organic compounds, and heavy metals.

3. Waste management: Improper waste management, such as open burning of waste, can release pollutants like particulate matter, dioxins, and furans.

Types of Industrial Air Pollutants:

1. Particulate Matter (PM): PM refers to small particles that can be inhaled and cause respiratory problems.

2. Nitrogen Oxides (NOx): NOx can contribute to the formation of ground-level ozone and particulate matter.

3. Sulfur Dioxide (SO2): SO2 can contribute to the formation of acid rain and particulate matter.

4. Volatile Organic Compounds (VOCs): VOCs can contribute to the formation of ground-level ozone and particulate matter.

5. Heavy Metals: Heavy metals, such as lead, mercury, and arsenic, can be toxic to humans and the environment.

Effects of Industrial Air Pollution:

1. Respiratory Problems: Industrial air pollution can exacerbate respiratory problems, such as asthma and chronic obstructive pulmonary disease (COPD).

2. Cancer: Some industrial air pollutants, such as particulate matter and VOCs, are known carcinogens.

3. Neurological Problems: Exposure to industrial air pollutants, such as heavy metals and VOCs, can cause neurological problems, such as cognitive impairment and neurodegenerative diseases.

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4. Environmental Damage: Industrial air pollution can damage the environment, including acid rain, haze, and smog.

Regulations and Control Measures:

1. Clean Air Act: The Clean Air Act is a federal law that regulates air pollution from industrial sources.

2. National Ambient Air Quality Standards (NAAQS): NAAQS set limits for certain air pollutants, such as particulate matter, ozone, and nitrogen dioxide.

3. Best Available Control Technology (BACT): BACT requires industrial facilities to use the most effective control technology available to reduce emissions.

4. Emissions Trading: Emissions trading programs allow industrial facilities to buy and sell emissions credits to meet emissions reduction targets.

Technological Innovations:

1. Scrubbers: Scrubbers use chemicals to remove pollutants from industrial emissions.

2. Electrostatic Precipitators: Electrostatic precipitators use electrical charges to remove particulate matter from industrial emissions.

3. Fabric Filters: Fabric filters use fabric to remove particulate matter from industrial emissions.

4. Renewable Energy: Transitioning to renewable energy sources, such as solar and wind power, can reduce industrial air pollution.

India is home to some of the most polluted cities in the world. Here are some of the major air pollution cities in India:

- Delhi: The capital city of India is often referred to as one of the most polluted cities in the world. The city's air quality is severely impacted by industrial emissions, vehicle exhaust, and crop burning [1].

- Patna: The capital of Bihar is known for its high levels of particulate matter, making it a major air pollution hotspot [2].

- Agra: Home to the Taj Mahal, Agra's air quality is severely impacted by industrial emissions and vehicle exhaust [1].

- Muzaffarpur: This city in Bihar is known for its high levels of air pollution, particularly during the winter months [2].

- Srinagar: The summer capital of Jammu and Kashmir is also struggling with air pollution, particularly due to vehicle emissions and industrial activities [1].

- Gurgaon: This city in Haryana is known for its high levels of air pollution, particularly due to vehicle emissions and industrial activities [1].

- Jaipur: The capital of Rajasthan is also struggling with air pollution, particularly due to vehicle emissions and industrial activities [1].

- Patiala: This city in Punjab is known for its high levels of air pollution, particularly during the winter months [2].

- Jodhpur: This city in Rajasthan is also struggling with air pollution, particularly due to vehicle emissions and industrial activities [1].

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- Kolkata: The capital of West Bengal is known for its high levels of air pollution, particularly due to vehicle emissions and industrial activities [1].

These cities are among the most polluted in India, and the government has launched various initiatives to reduce air pollution and improve air quality [1]

By implementing regulations, control measures, and technological innovations, we can reduce industrial air pollution and create a healthier and more sustainable environment.

In conclusion, air pollution is a serious environmental issue that requires immediate attention and action. By working together, we can reduce emissions, promote cleaner technologies, and create a healthier and more sustainable future for all.

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