



**RESEARCH ARTICLE**

**Industrial Air Pollution: A Preview**

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**ABSTRACT**

*The environment plays a vital role in the physical and mental essential pre-requisite of human life. Industrial pollution causes like energy crises destruction of tropical forests, mismanagement of natural resources, impure air and water, loss of productivity of land, green house effect and global warming, soil erosion which lead to the environmental pollution. The protection and improvement of environment has become a major issue. Industrial revolution, rapid increase of developmental activities, large scale production of arms and ammunitions, nuclear plants, testing of nuclear bombs, enormous increases in vehicular traffic, production of pesticides, detergents, different chemicals paints, types, solvents, fertilizers fuels etc.*

**Key words:** Industries, Air Pollution, Environment

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**MEANING OF POLLUTION**

Pollution has been defines as 'an undesirable change in the physical, chemical and biological characteristics of air, water and soil that may harmfully affect the life or create a potential hazard for living organism' (Odum.1971).

**TYPES OF POLLUTANTS**

Pollutions may be of two types: - (1) Persistent Pollutants and (2) Non-Persistent Pollutants.

**1. Persistent Pollutants:**

These pollutants are also called as non-bio degradable pollutants, Example-DDT, Polythene, aluminum cans, mercuric salts, phenolic compounds etc.

**2. Non-Persistent Pollutants:-** These are also called as "Bio-degradable pollutants, Example:-Agricultural wastes, garbage, domestic sewage etc. are the non-persistent pollutants. Pollutants include: (1) 10 Gases (2) Metal and their salts (3) Pesticides and agrochemicals (4) Drugs and pharmaceuticals products (5) Organic matter (6) radioactive substances (7) Heat and (8) noise.

**TYPES OF POLLUTIONS**

There are various types of pollutions like (1) Air pollution (2) Water pollution (3) Soil pollution (4) Noise Pollution (5) Radiation Pollutions etc.

**AIR POLLUTION**

Air pollution has both direct and indirect impact on human life, plant kingdom, construction materials, climate and entire ecosystem. These effects have both long term and short term implications and influence the economy and welfare of the human beings. Out of these, the effects of air pollution on human health are of great concern.

The five major primary air pollutions are:-

1. Oxides of carbon (Carbon monoxide, carbon dioxide).
2. Sulphur dioxide (So<sub>2</sub>)

3. Oxides of nitrogen (NO, NO<sub>2</sub>)
4. Hydrocarbons
5. Aerosols (Dispersion of solid and liquid matter or particles).

#### **Industrial Pollutants:**

Different industries produce different types of pollutions. Coal based thermal power plants produce pollutants like fly ash, soot and sulphur dioxide. The sulphuric and phosphoric acid units of fertilizer plants produce oxides of sulphur.

Nitrogen based plants produce ammonia nitrogen oxide, Chlorine, naphtha vapour and sulphur dioxide are the major pollutants produced by the textile industry, chlorine gas emanates from chemical plants and pesticides plants, Pollutants from steel plants are carbon monoxide, carbon dioxide, sulphur dioxide, fluorine and dust.

#### **The Green house effect:**

The important pollutants are Carbon Monoxide, Carbon Dioxide, Sulphur Oxide and Nitrogen Oxide. The green house effect, also referred to as global warming, it generally believed to come from the buildup of carbon dioxide gas in the atmosphere, carbon dioxide is produced when fossil fuels are burned. Plants convert carbon dioxide back to oxygen, but the release of carbon dioxide from human activities is higher than the world's plants can process.

1. To release of CO<sub>2</sub>, the Major producer of green house effect is mainly due to thermal power generation.
2. To slow down the rate of global warming by banning emissions of green house gases like CFCs and sharply reducing the use of fossil fuels.
3. Production of the flue gases (carbon dioxide, sulphur dioxide, nitrogen oxide etc. from petroleum, products mainly used in transport, Industry and residential sectors.

Urban and Industrial Pollution not only hinders the growth of various useful plants but also promotes the multiplication and growth of harmful insects of crops and increases their efficiency of attacking on green vegetation. Kausewitz et al.(1986) described that the number of plant eating bugs, for example-Medican ladybug (*Epilachana varivestis*) which feeds on the garden and soybeans, increases due to high concentration of sulphur dioxide. In case of long bugs, species like *oncopeltus fasciatus*. It feeds well when the contents of carbon monoxide, sulphur dioxide and nitrogen oxide further extend. That means through high level of pollutants. The harmful insects breed very well and quickly. The growth of harmful insects is not only directly influenced by the air pollution but also due to unknown process of development in the plants, possibly due to change in the composition of aminoacids. In the forests of Middle Jharsuguda and Hirakud where trees are affected industrial air pollution and ash pollution affected human beings

Predominantly damaged due to air pollution, the population of barking bug has also increased and indicates the additional losses due to attack of these insects. To keep the environment healthy and clean the Government of Odisha formulated different policies and programmes i.e. different environment society, Paryavaran Bhahini in the district of Kalahandi, Bolangir and Dhenkanal. It is necessary for development of all sectors i.e. industries, agriculture, transport etc. to meet the need of the over growing population and demand of society but it should be maintained by proper planning and scientific care.

#### **Effects of Air Pollution Human Health:**

Air is a fundamental element of human life as it makes breathing possible. Pollutants enter in to the human lungs through the following mechanisms (Sethi et al, 1991)

1. In the respiratory system, this reacts by the initiation of constructive reaction of a bronchi reflex.
2. In the blood vessels of the bronchus and its branches which try to reduce the absorption of harmful substances through the bronchial mucosa.

3. In the blood vessels of the lungs, where they react by increasing absorption from the alveolar (pulmonary) capillaries.
4. In the heart and large blood vessels taking part in the transport of toxic substances.
5. By penetration into organs, tissues or cells and by affecting metabolic processes.

Pollution in the air is thus of utmost importance from the view point of human health. Pollutants in the air, such as carbon particles, ozone, carbon monoxide, sulphur dioxide, unsaturated hydrocarbons, aldehydes, carcinogens etc.

Disrupt the normal mechanism of the human respiratory tract, causing bronchial infections and stenosis, chronic bronchitis.

Two types of reactions create annoyance to the sense of human body (i) eye, nose and throat irritation and (ii) odours, Headache, allergies, nausea and similar type of effects are considered to be the health effects. The effect of air pollution on human health depends upon nature of the pollutants, length of the time period, concentration of pollutants present on the air, contact or breathing of pollutants and state of health of the receptors.

### **EFFECTS OF ACID RAIN**

The situation is made worse since many of the earth's forests are being removed and plant life is being damaged by acid rain. Nitrogen oxides and sulphur dioxide produced by the electric generation plants, smelting plants and industrial buildings are released to the atmosphere where they form acids. Other sources of oxides of sulphur and nitrogen are petroleum refineries and combustion of petroleum and coal.

Then effects of acid rain, It turns the leaves of plants yellow and brown, accelerates senescence in plants, lowers productivity of forest, grasslands and crops, change soil quality and soil fertility, kills aquatic plants and thus lower productivity of aquatic ecosystems. It causes skin and respiratory diseases in man, Damages to the limestone and marble monuments and increases dissolved metals in soil and water.

### **CONTROL OF INDUSTRIAL AIR POLLUTION**

#### **Absorption:**

It is a process where gases, vapours or liquids are concentrated on a solid surface as a result of surface or chemical force physical absorption and chemisorptions respectively. The amount of absorbed substance depends directly on internal surface area of the solid and the kinetics of the process. The most important adsorbent in industrial use on bauxite, activated carbon, activated aluminum, Silica gel and molecular sieves.

#### **Filters:**

Filters separate out the particulate matter from the stack gases in electric power plants. The smoke passes through a series of cloth bags which trap the particulate matter.

#### **Scrubbers:**

In scrubbers, the collection process is dependent on collisions between the particles and liquid triplets in suspension in the gas. The collisions result from inertial, gravitational and electrostatic effects and diffusion phenomena.

#### **Catalytic Converters:**

Catalytic converter is a device which runs exhaust gases of automobiles through a bed of alumina pellets coated with platinum or pollution catalyst. This device is attached to the exhaust system of the vehicle and converts carbon monoxide and hydrocarbons into carbon dioxide and water and nitrogen oxide into nitrogen gas. The catalyst is rendered ineffective by lead and, therefore, automobiles with catalytic converters must use lead-free petrol.

#### **Control and Fluoride Pollution:**

Industrial emission having higher percentage of fluoride gases and fumes are checked through wet scrubber and dry scrubber before it is released to the atmosphere. Adequate

control measures like process Optimization, emission monitoring and control and solid waste management in industrials could also check the entry of fluoride in to the environment large extent.

#### **Plantation of trees:**

Plantation of trees especially, broad leaf plants such as various ornamental trees, forests and fruit trees keep large amount of gases and dust on their leaves, twigs and stems and these tree parts absorb various pollutions.

In many countries in the world, steps are being taken to stop the damage to our environment from air pollution. Scientific groups study the damaging effects on plant, animal and human life. Legislative bodies write laws to control emissions, Educators on schools and universities teach students, beginning at very ages about the effects of air pollution.

1. Industries should be use large chimney.
2. Creation of public awareness regarding hazards of Industrial air pollution and deforestation and importance of plantation should be realized.

#### **SUGGESTION**

To environment prevention an assessment has been made here to study the status of environmental education in the curriculum of lower primary school on higher secondary school level.

#### **CONCLUSION**

The regulatory agencies mentioned above play an essential role in reducing and preventing air pollution in the environment only through the efforts of scientists, business, leathers, legislators and individuals can be produced the amount of air pollution on the planet. This challenges must be met by all of us in order to assure that a healthy environment with exist for ourselves our children.

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