

Environment Pollution

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ENVIRONMENTAL POLLUTION

- ❑ **Environmental Pollution** can be defined as any undesirable change in **physical, chemical, or biological** characteristics of any component of the environment i.e. air, water, soil which can cause harmful effects on various forms of life or property.

- ❑ Types of Pollution-
 - a) Air Pollution
 - b) Water Pollution
 - c) Land Pollution/ Soil Pollution
 - d) Sound Pollution/ Noise Pollution

- ❑ Generally, Substances that causes pollution is called as **Pollutant**.

- ❑ Types of Pollutant – Depending on origin- a) Persistent & non-Persistent
 - Depending on nature of disposable- b) Degradable or Non-Degradable
 - Depending on source-) Point source and non-point source

- Generally, Substances that causes pollution is called as **Pollutant**.
- Pollutants are basically two types –a) **Persistent pollutants:** pesticides, nuclear wastes, and plastics etc.
b) **Non-Persistent pollutants:** plant debris, animal debris, etc.
- From another perspective, pollutants can be classified as follows:
 - **According to origin- Man-made pollutant (pesticides, fungicides) and natural pollutant (dust)**
 - **According to nature- Primary pollutant (CO, NO_x, dust) and Secondary pollutant (Ozone, Smog, PAN)**
 - **According to decomposition nature- Degradable (plant debris) and Non-Degradable pollutant (plastic, D.D.T)**
 - **According to origin- Point source pollutants (iron, zinc) and Non-point sources (rural sanitation, mining)**

WATER

POLLUTION

- Water Pollution can be defined as alteration in physical, chemical, or biological characteristics of water through natural or human activities and making it unsuitable for its designated use.
- Physical characteristic refers to colour, taste, turbidity and smell of water.
- Chemical characteristic refers to- pH, TDS, DO, COD, BOD.
- Biological characteristic refers to- presence of biological components i.e. bacteria, fungi, etc.
- On Earth, only 1/3th part of available water from ice and groundwater is pure, rest is contaminated.

SOURCES OF WATER

The sources of water pollution can be classified as

- Municipal Waste Water
- Industrial Pollution- wastes from industries, metals, etc.
- Inorganic Pollutants- fine particles of heavy metals, chlorides,
- Organic Pollutants- oil, phenols, organic acids like HNO_3 etc.
- Agricultural Wastes- Chemical fertilizers, pesticides
- Marine Pollution – Grease, oils, detergents,
- Thermal pollution -Thermal plants and nuclear plants



Municipal waste water



Industrial pollution



Thermal pollution



Marine pollution



Agricultural pollution

EFFECT OF WATER

POLLUTION

- An excessive amount of mercury in water can cause Minamata disease in humans and dropsy in fishes; Lead in large amount can cause dyslexia, Cadmium poisoning causes Itai – Itai disease, etc.
- Polluted water has less amount of Dissolved oxygen (DO) content which is important for sensitive organisms, thereby eliminates sensitive organisms.
- Excess of nitrate in drinking water is dangerous for infants and human health, excess fluoride cause neuromuscular disorder and teeth deformity, hardening of bones and painful joints.
- Biological magnification and eutrophication.

CONTROL OF WATER POLLUTION

- Usage of water should be minimized by changing the techniques involved.
- Recycling and treatment of water should be used to the maximum extent possible.
- The quantity of discharge of wastewater can be minimized.
- Excessive use of pesticides and fertilizers should be avoided.
- Organic farming and efficient use of animal residues as fertilizers.

AIR POLLUTION

- ❖ **Air pollution** is the introduction of chemicals, particulate matter, or biological materials that cause harm or discomfort to humans or other living organisms, or cause damage to the natural environment or built environment, into the atmosphere.
- ❖ A substance in the air that can cause harm to humans and the environment is known as an **air pollutant**.



CAUSES OF AIR POLLUTION

- Carbon dioxide-this happens because of deforestation and fossil fuel burning.
- Sulfur dioxide –Due to the burning of sulfur containing compounds of fossil fuels (Coal & petroleum).
- Sulfur oxides- very dangerous to humans at a high concentration. Sulfur in the atmosphere is responsible for acid rain.
- Nitrous Oxide (N₂O)- Fossil fuel
- Secondary Pollutants- Photochemical smog(PAN), Acid rain, O₃,

SOURCES OF AIR POLLUTION

Natural sources

- Volcanic eruptions
- Forest Fires
- Biopollutants- Foul odours emitted by decay and decomposition of organic material
- Strong winds or storms

Man-made sources

- Burning of Fossil fuels- CO, CO₂, Particulate matters, hydrocarbons and metallic traces
- Automobiles- CO, oxides of nitrogen (NO_x), sulphur compounds, NH₃, Organic acids
- Steel plants- CO, CO₂, SO₂, Fluorine and dust
- Thermal power plants- SO₂, dust, in form fly ash.
- Textiles Industries- Cotton dust, nitrogen oxides, chlorine, SO₂, smoke, vapours of naphtha, etc.
- Fertilizer Industries- Oxides of Sulphur, ammonia, oxides of nitrogen, hydrocarbons
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EFFECT OF AIR POLLUTION

- Cause **Global warming** due to excess concentration of CO₂, NO_x, CFC, SO₂.
- Causes **Green House Effect.**
- Causes **Acid rain.**
- Nitrogen oxides in air cause Problems in the lungs, respiratory systems and causes asthma and bronchitis.
- Suspended particulate matter in air causes lung irritation reduces development of RBC and pulmonary malfunctioning.
- CO causes severe headache, irritation to mucous membrane, unconsciousness and death.
- Photochemical smog cause asthma and bronchitis.

CONTROL OF AIR POLLUTION

- Policy measures- Environment Protection Act, 1986.
- Modification of industrial process and selection of suitable fuels and its utilization.
- Collection of pollutants and convert it into less toxic forms by different methods.
- Mass Emission Standards
- Fuel Quality Specifications
- Alternate Fuels-Initiatives

LAND POLLUTION

- ❖ Land pollution is the demolition of Earth's land surfaces often caused by human activities and their misuse of land resources. It occurs when waste is not disposed properly.



CAUSES OF LAND POLLUTION

Four Main causes of land pollution are-

- ❖ Intensive use of pesticides and fertilizers in agricultural practices
- ❖ Unscientific disposal of solid wastes on land\
- ❖ Dumping of radioactive wastes on land and/ or radioactive out fall
- ❖ Heavy metals in soil pollution

EFFECT OF LAND POLLUTION

- ❖ Agriculture: It reduces soil fertility and thus crop yields; increase soil erosion and salinity.
- ❖ Ecological imbalance and imbalance in flora and fauna further increases.
- ❖ Problems in urban areas like clogging in drains, the release of gases, foul smells, and problems in wastewater management.
- ❖ Release of radioactive rays, biomagnification and pollutant gases cause health problems.

SOUND POLLUTION



✓ Sound Pollution is excessive, displeasing human, animal, or machine-created environmental noise that disrupts the activity or balance of human or animal life.

Sound becomes undesirable when it disturbs the normal activities such as working, sleeping, and during conversations.

□ World Health Organization stated that “Noise must be recognized as a major threat to human well-being”.

SOURCES OF SOUND POLLUTION

- Industrial Noise – Machines, crushing and grinding, drilling, stamping metal
- Transportation Noise- Vehicular noise, engines in jets, motors in trucks, Airplane's noise
- Domestic and Religious Activities

EFFECT OF SOUND POLLUTION

- According to the USEPA, there are direct links between noise and health. Also, noise pollution adversely affects the lives of millions of people.
- Noise pollution can damage physiological and psychological health.
- High blood pressure, stress related illness, sleep disruption, hearing loss, and productivity loss are the problems related to noise pollution.
- It can also cause memory loss, severe depression, and panic attacks.

THANK YOU