

ENVIRONMENTAL ISSUES

SYNOPSIS:

- Pollution is the undesirable change in physical, chemical and biological properties of air, water and soil which directly or indirectly affect the environment.
- Biodegradable pollutants are pesticides DDT, BHC, chlorinated hydrocarbons etc. They are degraded very slowly or non degradable. So their effect is severe.
- Garbage, sewage etc., are biodegradable which are decomposed very quickly.
- Composition of main gases in dry air by volume is N – 78.09%; Oxygen – 20.94%; Argon – 0.93%; CO₂ – 0.03%.
- Primary air pollutants are sulphur, carbon compounds, hydrocarbons, nitrogen compounds, halogen compounds, hydrogen fluoride and HCl etc.
- Secondary air pollutants are photochemical oxidants as they are formed photo chemically from primary pollutants. They are aldehydes, ozone, PAN and photochemical smog.
- Major air pollutants and their effects are

Major air pollutant	Source	Effects
1. Carbon monoxide	Incomplete combustion of fuels, automobiles	Effect on Oxygen transport by blood as CO has greater affinity with Hemoglobin. It causes headache, blurred vision and coma and death.
2. Carbon dioxide	Deforestation, burning of fossil fuels	Global warming, green house effect.
3. Sulphur Dioxide	Burning of fossil fuels, melting of sulphur ore, metal smelting	Acid rains, respiratory problems
4. Nitrogen Oxides	Automobile exhaust	Phytotoxic pollutant. It causes necrotic spots on the surface of leaves. It forms Peroxyacetyl nitrate (PAN) & photochemical smog which effect on respiration and vision.
5. Aerosols/particulate (according to central pollution control board, particles of 2.5 micrometers or less than of it are harmful)	Fly ash, forest fires, cement factories, asbestos, mining, combustion of fossil fuels.	

Various acts in India related to control pollution

- 1) Water (Prevention and control of pollution) Act --- 1974
- 2) Air (prevention and control of pollution) Act ---- 1981.
- 3) Air (prevention and control of pollution) Act ---- 1987 added Noise as an air pollutant
- 4) Environment (Protection) Act, 1986.
- 5) Chipko movement, 1974.
- 6) Joint Forest Management (JFM) – 1980

Preventive measures of pollution

- a) Electrostatic precipitators --- Remove 90 % particulate matter from the exhaust from a thermal power plant.
- b) Scrubber --- remove sulphur dioxide
- c) Catalytic converters ---- Convert unburn hydrocarbons into CO₂ and water
Convert Carbon monoxide into CO₂ Convert nitric oxides into nitrogen gas.
- d) Settling chambers ---- to remove large particulates.
- e) Incinerators ---- to burn wastes of hospital wastes.
 - According to Central Pollution Control Board (CPCB), particles of 2.5 micrometers or less in diameter are highly harmful to man.
 - Sound is measured in units called decibels (dB).
 - Human ear is sensitive to sounds ranging from 0 to 180 dB.
 - Any sound above 120 db is harmful.

WATER POLLUTION:

- Ganga action plan was started in the year 1985.
- The name of Ganga action plan was renamed as National River Conservation Project/plan.
- Dissolved Oxygen is the amount of Oxygen dissolved in a given quantity of water.. It is expressed in ppm.
- The amount of dissolved oxygen required for biological oxidation of microbes in an unit volume of water is known as Biological oxygen demand (BOD)
- Eutrophication is the natural ageing of lake due to adding of nutrients.
- Algal bloom is the excessive growth of planktonic algae.
- Eichhornia crassipes (water hyacinth) is known as terror of Bengal.
- Biomagnifications is the accumulation of pollutants like Mercury and DDT in the tissues of organisms in increasing concentrations at successive tropic levels of the food chain.
- High concentrations of DDT destroys calcium metabolism in birds which causes thinning of egg shells.
- Thermal pollution reduces DO. It eliminates sensitive organisms like stenothermal animals.

SOIL POLLUTION:

- Soil pollution is due to solid wastes and agro chemicals like fertilizers and pesticides.
- Sanitary landfills are adopted as the substitution for open dumps.
- Hospital wastes should be burned by using incinerators.
- Recycling of electronic wastes is one of the environmental friendly programme
- Radioactive wastes cause cancer like leukemia.
- Accidental leakages occurred in Three Mile Island, USA and Chernobyl, Russia.