

Pollution

- **Global warming** - The rise in overall temperature of the earth because of the green house effect is referred as global warming.
- **Air pollution**
 - The layer of air present around the earth is called atmosphere.
 - Atmosphere is composed of 78% of nitrogen, 21% of oxygen, and 1% percent other gases such as carbon dioxide, ozone, water vapour, methane, etc.
 - The phenomenon of contamination of air with unwanted substances so that it becomes harmful for living organisms and non-living substances is known as **air pollution**.
 - The substances, which cause air pollution, are called **air pollutants**.
 - Sources of air pollution are
 - Power plants
 - Factories
 - Automobiles
 - Burning of firewood
- **Types of air pollutants**
- **Carbon monoxide**
 - It is a colourless poisonous gas.
 - It is produced from incomplete burning of fossil fuels.
- **Smog**
 - It is made up of smoke and fog.
- **Sulphur dioxide**
 - It is produced from combustion of fuels.
- **Nitrogen dioxide**
 - It is produced from incomplete burning of fuels.
- **Chlorofluorocarbons (CFCs)**
 - They are released from refrigerators, air conditioners, and aerosol sprays.
 - They cause damage to the ozone layer resulting in the formation of ozone hole.

- **Suspended particulate matter**
 - It comprises of tiny particles, which remain suspended in air for a long time.
 - They are produced during burning of fossil fuels in power plants, mining, steel making, and other industrial processes.
- **Ozone depletion**
 - Ozone can be classified as good ozone and bad ozone.
 - Good ozone is present in the stratospheric region of the atmosphere while bad ozone is produced by the interaction between the various primary pollutants in the tropospheric layer.
 - The thickness of ozone is measured in terms of Dobson units (DU).
 - The thinned layer of ozone over Antarctica region is referred to as the ozone hole.

Chlorofluorocarbons or CFCs have caused damage to the stratospheric layer, leading to the formation of the ozone hole.

- High dose of UV-B radiations causes corneal cataract and inflammation of cornea in human beings. The inflammation of cornea is known as snow blindness or sunburn of cornea.
- **Montreal Protocol** is an international treaty signed for controlling the emission of ozone-depleting substances. It was signed in the year 1987.

Water pollution

- The common sources of water pollution are domestic sewage, industrial effluents, thermal wastewater discharge.
- **Eutrophication:** It is the natural ageing process of a water body due to nutrient enrichment. It increases the ecosystem's primary productivity.
- **Domestic sewage** is rich in nitrogen and phosphorus. These compounds act as nutrients for the growth of algae in contaminated water bodies. This accelerates the rate of eutrophication in the water bodies.
- **Oil Spills** - The accidental discharge of oil or petroleum in water bodies is called oil spills. This results in the death of a lot of marine lives.
- The algal bloom causes the microbial population to increase, which consumes larger amount of oxygen dissolved in the water bodies. As a result, the level of dissolved oxygen in the water bodies decreases, and biological oxygen demand of the water bodies increases.

- **Industrial effluents** contain inorganic toxic substances, which may undergo **biomagnification**.
- Thermal wastewater discharge involves release of heated water from thermal power plants that increase the temperature of the water body. It causes damage to the indigenous biodiversity of the water body.
- Biological magnification: It is the increase in the concentration of pollutants or harmful chemicals with the increase in each trophic level. DDT shows the phenomenon of biomagnification.
- Integrated wastewater management is the possible solution for controlling water pollution. In this approach, the water is first treated by conventional means such as filtration, sedimentation, and chlorine treatment, followed by bioremediation.

Sources of soil pollution:

- Industrial Wastes
- Commercial and Domestic Waste
- Chemical Fertilizers
- Biomedical Wastes
- Pesticides

Solid waste can be categorised into into two types:

- Biodegradable Waste
- Non- biodegradable Waste

Preventive measures to reduce soil pollution:

- Treating the waste products before disposal
- Reducing the use of polythene bags
- Minimizing the use of products made of plastic
- Minimizing the use of pesticides

Sources of radioactive pollution

- Mining of radioactive ores (such as uranium and thorium)
- Nuclear power plants accidents
- Nuclear explosions

- Industrial emissions from nuclear reactors
- Use of X rays in medicine

Effects of radioactive pollution

- Radiations have the ability to penetrate into the body tissues and can bring the cellular damage. It leads to various diseases such as skin cancer, eye cataract, etc.
- Radioactive substances, when penetrate into the soil, result in soil pollution. They destroy the fertility of the soil.
- Radioactive substances can get transported into the plants through roots. It leads to genetic mutation and hampers the normal functioning of plants.

Measure to prevent radioactive pollution

- The safety measures during the handling of radioactive substances should be strictly enforced.
- Careless handling of radioisotopes and leakage from nuclear reactors must be avoided.
- The radioactive wastes must be carefully and efficiently dispose off from the environment.
- Industrial wastes carrying radioactive substances must be adequately treated before being discharged into the environment.

- Unpleasant sound is called **noise**.
- **Noise pollution** – Presence of unwanted and excessive sound in the environment
- Noise pollution may cause many health related problems.
- **Measures to control noise pollution:**
 - Moving noise producing industries away from residential area.
 - Minimizing the usage of loud speakers.
 - Avoiding unnecessary usage of horns
 - Planting more and more trees.