

Pollution and its Hazards.

Environmental Pollution is the unfavourable alteration of our surroundings wholly or largely as a by-product of man's activities through direct or indirect effects of changes in energy patterns, radiation levels, chemical and physical constitution and abundances of organisms. These changes may affect man directly, or through his supplies of water and of agricultural and other biological products, his physical objects or possessions or his opportunities for recreation and appreciation of nature.

In simple words pollution can be defined as any undesirable changes in environment or surroundings due to daily activities is called pollution.

The materials which bring about these undesirable changes are called pollutants. The examples of pollution are (dust, pollen, plastic, harmful gases, suspended particles etc). The pollutants when added into the biosphere in greater quantities adversely affects the functioning of ecosystem and affects plants, animals and humans.

Pollutants can be classified into two categories such as biodegradable pollutants (Sewage, Peels of vegetables etc) these pollutants can be degraded by natural processes and can be converted into useful substances; on the other hand the non biodegradable pollutants are materials that do not decompose in natural way, it is difficult or impossible to remove these pollutants from the environment for eg DDT, Polyethylene, Pesticides etc)

according to the form in which the pollutants persist after release into the environments pollutants may be of two types

- ① Primary Pollutants → They remain the environment as it is without any further change eg DDT, Plastic
- ② Secondary Pollutant → They are formed by the interaction among primary pollutants, for example Peroxyacetyl nitrate (PAN) formed by reaction of nitrogen oxides and hydrocarbons in sunlight secondary pollutants are more harmful than the primary pollutants and this effect is called Synergism.

on the basis of quantity the pollutants can be divided into two types -

① Quantitative → These are substances which occur in nature but act as a pollutant when their concentration reached beyond a threshold level for eg CO_2 and NO_2 .

② Qualitative pollutants → These are pollutants which are not found in nature but pass through human activity eg - fungicides, herbicides, DDT etc.

on the basis of origin the pollutants may be two types

- (a) Natural → Volcanic eruptions produces harmful gases and particulate matter
- (b) Anthropogenic → Industrial pollution, Agricultural pollution etc.

Types of Pollution

- Pollution is of 5 main types
- (1) Air Pollution
 - (2) Water Pollution
 - (3) Soil Pollution
 - (4) Radioactive Pollution
 - (5) Noise Pollution.

Air Pollution → Addition of foreign particles, gases and other pollutants in air having adverse effect on human beings and other living organisms is called air pollution.

Air pollution is complex in origin, it may be natural or anthropogenic. Volcanic eruptions, forest fires, decaying of organic and inorganic materials leads to the natural air pollution, while the man made pollution occurs in cities or areas which are densely populated or have a high density of various types of industries. Many pollutants do not rise above 600 meters of earth's surface. The movement of air pollutants leads to higher concentration of pollutants in certain areas.

Types of Air Pollution

- (1) Gaseous air pollutants - These pollutants are in gaseous state at normal temperature and pressure.
- (2) Particulate matter - These pollutants occur as solid and liquid particles. The particles larger than 10 μm in diameter settle on earth and smaller particles such as dust, smoke etc remain suspended for long period in the air called suspended particulate pollutants.

Sources of Air Pollution -

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Important air pollution sources and Emissions.

Category	Examples	Pollutants
Chemical Plants	Petroleum refineries fertilizers, cement Papermills, ceramic clay products and glass manufacture	Hydrogen Sulphide SO ₂ , fluorides organic vapours and dusts.
Crop spraying	Pest and weed control	organophosphates, chlorinated hydrocarbons lead, arsenic.
Fuel burning	Domestic burning thermal power plants	Sulphur and nitrogen oxides.
Metallurgy	Aluminium and Steel Plants	lead, zinc, fluorides and Particulates
Nuclear Plants	Bomb explosions	Sr-90, Cs-137 C-14 etc.
Ore preparation	Crushing, grinding and screening	Uranium and Beryllium dust Argon-41, Iodine 131
Spray painting solvent extractions inks and solvent cleaning	dyeing, painting dry cleaning	Hydrocarbons and organic vapours
Transportation	Cars, trucks, boats Aeroplanes	CO, NO, NO ₂ lead, smoke organic vapour etc.
Waste recovery	Scrap metal yards rendering plants	Smoke, hot odours, organic and metal fumes.

Effects of Air pollution on human health

Air pollution causes diseases, allergies and even death to humans, it may also cause harm to other living organisms such as animals and food crops, and may damage the natural or built environment. Both human activity and natural processes can generate air pollution.

Air pollution leads to many diseases related to respiratory infections, heart diseases, stroke and lung cancer, it also causes wheezing, coughing, irritation of the eyes, nose and throat. Air pollution can also cause worsening of heart problems, asthma and other lung complications, ventricular hypertrophy, autism, retinal degeneration, effects on fetal growth and low birth weight.

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