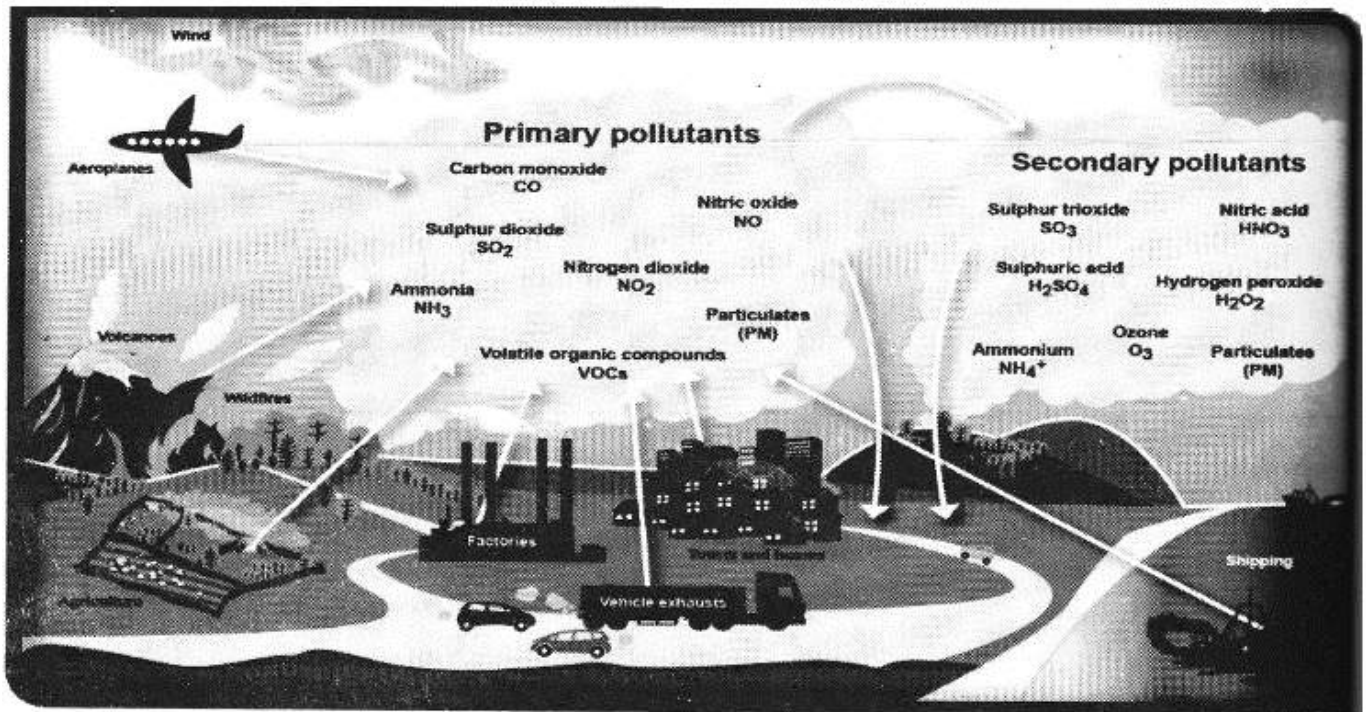


Pollution and Calamities



FUNDAMENTAL

Pollution is deterioration of environment due unwanted and undesirable substances present leading to affect health and day to day life.

Unwanted and undesirable substances present in air, water, and soil are pollutants such as sulphur dioxide (SO_2), lead oxides, smoke dust particles etc.

POLLUTION

Air pollution	Contamination of air with harmful gases and substances.
Water pollution	Presence of undesirable substances in the water
Soil pollution	Deterioration of soil with harmful chemicals
Noise	Unwanted and undesirable sound > 80dB
Radioactive pollution	Radiation

AIR POLLUTION → CAUSES

Man made

- Burning of fossil fuel.
- Smoke from factories.
- Release of harmful gases from cars and other vehicles.
- Deforestation

Natural

- Volcanic eruption
- Forest fire

Deforestation is the major cause of Air pollution as plants and trees act as natural purifiers.

Volcanic eruptions causes concentration of carbon dioxide, nitrogen oxide and sulphur dioxide.

Consequences of air pollution

- **Acid rain-** Acid rain occurs when sulphur di-oxide (SO_2) nitric oxide (NO_2) mixes with rain water forming sulphuric acid (H_2SO_4) and nitric acid (HNO_3). It can corrode buildings and statues Taj Mahal corroded due to acid rain.
- **Green house effect** - Gradual warming of the earth atmosphere due to absorption of infrared radiation. By CO_2 , water vapors, methane, nitrous oxide and chloroflouro carbon, flue carbon.
- **Ozone depletion-** carbon dioxide protects the ozone layer, by preventing the formation of nitrogen oxide. Which saves us from the harm full effect of ultraviolet radiations from sun.

Effect of air pollution

- It causes itching and irritation to eye, skin, nose throat, and respiratory tract.
- Many respiratory problems like asthma, bronchi's, occurs may due to air pollution.
- Injurious to plant and other animals also.
- Due to presence of smoke, dust and vapour visibility decreases.
- Air pollution may cause cancer and neurological disorder.

Methods to minimize the air pollution

- Safer fuels CNG in place of diesel and petrol.
- Factory and industries should installed filters, chimneys chemical catalysts to purify fume.
- Plantation of trees
- Renewable energy source promotion.
- Plastic materials use should be reduced, recycled, reuse.

WATER POLLUTION:-

Water is universal solvent as it dissolves maximum substances. Due to human activities over, industrialisation and unawareness the smell and quality of water is being compromised which is called water pollution.

Causes

- Dumping of factories and household waste in river.
- Unwanted and continuous growth of algae, zooplanktons over the surface of pond water preventing light to go deep.
- Throwing of dead bodies of animals.
- Washing of clothes with detergents and throwing wastes into river.
- Release of insecticides, pesticides, and harmful fertilizers (nitrate and sulphates) along with rain water or wind etc.

- Sewage and petrochemical spills.

Consequence of water pollution

- Killing of fishes and other aquatic lives
- Affects oxygen content of water bodies leading to respiratory inability of aquatic lives.
- Disturbance of food chain due to killing of aquatic lives.
- Plant productivity will be reduced.
- Eutrophication this process fill the water body with organic and other wastes.
- Pathogens enter human body through polluted water and causes typhoid, dysentery, cholera and skin diseases.

Prevention of water pollution

- High alertness and self-consciousness can prevent water to be polluted.
- Use of electric vehicles to avoid nitrogen waste from automobile exhaust.
- Pesticides and chemical not to be allowed to reach water body.
- Human and animals wastes to be prevented to entering river.
- Avoid bathing and throwing of dead in a water bodies.

SOIL POLLUTION

Excessive unorganized agriculture and non-judicious use of chemical fertilizer, pesticides, weedicide herbicides and insecticide contaminate the soil, which is called soil pollution.

Causes

- Harmful toxic chemical are released from underground pipe on soil.
- Acid rain when rain fall on the soil degrades its quality.
- Excessive use of fertilizers (chemical) again and again on same soil.
- Unfavorable irrigation practices.
- Wastes toxic chemical released from industries in the ground.
- Presence of non-biodegradable substances (Plastic, polythene) etc. degrade soil quality.
- Spraying of Pesticide, weedicides, herbicides etc. deteriorate the quality of soil.

Consequence of soil pollution

- Disturbance of food chain and web existing in soil.
- Plant are reduced dust reduced soil fertility.
- Soil erosion dust reduced vegetation.
- Migration of animal living in soil to another place due to shortage of food.
- Polluted soil causes disease.
 - (a) Cholera and dysentery are caused when soil pollutant reaches water sources.
 - (b) Brain and nervous disorder when the pollution disturbs neuromuscular growth and development.

(c) Cancer due to chemical carcinogen due to spray of insecticides.

Step to maintain the quality of soil

- Maximum use of biological manures like cow dung instead of fertilizers.
- Use of organic fertilizers
- Contaminant soil should be taken away excavation.
- Crop rotation mixed cropping etc. should be in practice to restore soil fertility.

NOISE - POLLUTION

It is the loud unwanted and undesired sound. Sound > 80dB (decibel) given unpleasant experience and regarded as noise pollution 90% of noise pollution is due to the noise produced by the motor vehicles.

Causes

- Construction works
- Factories industries
- Transport – modes
- Explosion in mining

Some important sound intensity:-

- Normal talking - 40dB
- Whispering - 20dB
- Aircraft - 120dB
- Atomic explosion - 200dB

Consequences of noise pollution

- Temporary or permanent deafness due to prolonged exposures of noise.
- Sleep disturbance restlessness, headache and lethargic feeling.
- Affects plant's growth.
- Reduces learning and reading skill.
- Weakens building and bridges.
- Cause stress and Hypertension, mental agony.

Protection form noise pollution

- Education regarding noise pollution.
- Sound proofing and sound muffling systems.
- Tree plantation around high ways and roads in residential areas.
- Avoidance of high intensity sound for longer time and use of automation at these sites.

NATURAL CALAMITIES / DISASTER

Earthquake

An earthquake is a sudden shaking of the ground caused by the movements or vibrations deep inside the earth. The earth's upper layer, the crust, is made of large and small plates. The layers of earth under the plates are hot and in a molten state, as the core inside are extremely hot and moving. These movements cause the plates to slide smoothly against each other. These movements can sometimes give rise to earthquake when the ground shakes, houses, building and bridges shake. When it lasts for longer time roads crack, structures shatter and communication system collapse leading to loss of life and property. Earthquake is measured on Richter's scale. People who study earthquake are called seismologist earthquake can be detected with an instrument called seismograph.

Volcano

Is an opening in earth's surface which allows hot, molten rock ash and gases to escape form below the surface? These burst out of the crest at the top or holes around the sides of the volcano through weak point some volcanoes are formed under the sea. When the lava cools down, the area formed cools like a new island. The barren island is the only active volcano in the Indian subcontinent, located in Andaman and Nicobar Island.

Tidal waves

Very high Tidal waves are called tsunami. Tsunami are caused by undersea earthquake or by the sea come rolling towards the shore and causes distraction on the sea there in seconds. These are already high tides and storm wave hit the land and causes severe damage.

Drought

Drought are caused by poor rain fall. Land and water bodies dry up because of severe heat. This causes acute shortage of water for agriculture and domestic use. Because of scarcity of water animals and people suffer from lack of food and drinking water.