

## **Environmental Pollution**

Environmental pollution means 'the release of harmful substances and energy from waste products of human activities.

### **What are pollutants?**

Pollutants are defined as any form of energy or matter that causes dilatation and pollution in the existing natural balance of ecosystems. The three media through which the pollutants are transferred are land, air and water.

### **Types of pollution:**

They are classified on the basis of medium through which pollutants are transported and diffused. They are:

(i) air pollution, (ii) water pollution, (iii) land pollution and (iv) noise pollution.

## **Water Pollution**

### **1. What is water pollution?**

Degradation of the quality of water due to indiscriminate use of water is called water pollution. The water becomes unfit for the use because of high concentrations of suspended particles, organic and inorganic substances. In such a situation, the self-purifying capacity of water is unable to purify the water.

### **2. What are the Causes/sources of water pollution?**

- i. **Natural sources:** Due to erosion, landslides, decay and decomposition of plants and animals, etc.
- ii. **Human sources:** industrial, agricultural and cultural activities.
  - a. **Industrial activities:** is the most significant contributor.
    - i. Industries produce several undesirable products including industrial wastes, polluted waste water, poisonous gases, chemical residuals, numerous heavy metals, dust, smoke, etc.
    - ii. Most of the industrial wastes are disposed off in running water or lakes. Consequently, poisonous elements reach the reservoirs, rivers and other water bodies, which destroy the bio-system of these waters.
    - iii. Major water polluting industries are leather, pulp and paper, textiles and chemicals.
  - b. **Agricultural activities:**
    - i. Various types of chemicals used in modern agriculture such as inorganic fertilisers, pesticides and herbicides causes water pollution.
    - ii. These chemicals are washed down to rivers, lakes, tanks and under ground water and causes water pollution.
    - iii. Fertiliser induces an increase in the nitrate content of surface waters.
  - c. **Cultural activities:**
    - i. Such as pilgrimage, religious fairs, tourism, etc. also cause water pollution. In India, almost all surface water sources are contaminated and unfit for human consumption.
  - d. **Urban activities:**
    - i. Such as Sewage disposal, urban run-off causes water pollution.

### **3. What are the Effects of water pollution?**

- a. Water pollution is a source of various water borne diseases.
- b. The diseases commonly caused due to contaminated water are diarrhoea, intestinal worms, hepatitis, etc.

- c. World Health Organisation shows that about one-fourth of the communicable diseases in India are water-borne.

### **Sources of Pollution in the Ganga and the Yamuna Rivers**

- i. **Ganga River:**
  - a. Ganga River is polluted in the states of Uttar Pradesh, Bihar and West Bengal.
  - b. Polluted stretches are near Kanpur, Varanasi and Farrakka Barrage.
  - c. Causes of pollution in Ganga River are:
    - i. Industrial pollution from towns like Kanpur.
    - ii. Domestic wastes from urban centres.
    - iii. Dumping of carcasses in the river.
- ii. **Yamuna River:**
  - a. Yamuna River is most polluted in Delhi and Uttar Pradesh.
  - b. Polluted areas are Delhi to confluence with Chambal and near Mathura and Agra.
  - c. Causes of pollution in Yamuna River are:
    - i. Extraction of water by Haryana and Uttar Pradesh for irrigation.
    - ii. Agricultural run off resulting in high levels of micro-pollutants in the Yamuna.
    - iii. Domestic and industrial waste of Delhi flowing into the river Delhi dumping its domestic waste

### **Air Pollution**

#### **What is air pollution?**

Increased concentration of contaminants like dust, fumes, gas, fog, odour, smoke or vapour in the air is called air pollution. This concentration may be harmful to flora and fauna and to property.

#### **What are the causes/sources of air pollution?**

- i. Increased use of varieties of fuels such as coal, petrol and diesel.
- ii. Increase in emission of toxic gases from industrial activities into the atmosphere.
- iii. Mining activities release dust in the air which pollute the air.
- iv. Important pollutants are oxides of sulphur and nitrogen, hydrocarbons, carbon dioxide, carbon monoxide, lead and asbestos.

#### **What are the effects of air pollution?**

- i. Air pollution causes various diseases related to respiratory, nervous and circulatory systems.
- ii. Smoky fog over cities called as urban smog is caused by atmospheric pollution.
- iii. Air pollution can also cause acid rains.

### **Noise Pollution**

#### **What is noise pollution?**

The state of high level of noise levels which is unbearable and uncomfortable to human beings is called noise pollution.

#### **What are the causes/sources of noise pollution?**

- i. It is caused by noise from various factories, mechanised construction and demolition works, automobiles and aircrafts, etc.

- ii. Noise from sirens, loudspeakers used in various festivals, programmes associated with community activities.
- iii. The biggest noise pollution is produced by traffic.
- iv. In sea traffic, the noise pollution is confined to the harbour due to loading and unloading activities being carried.

**What are the effects of noise pollution?**

- i. Noise pollution causes stress and high blood pressure in people living close to the source of noise pollution.

## **Solid Waste**

**What are solid wastes?**

Solid waste refers to a variety of old and used articles, For example stained small pieces of metals, broken glasswares, plastic containers, polythene bags, ashes, floppies, CDs, etc. dumped at different places. These discarded materials are also termed as refuse, garbage and rubbish, etc.

**Two sources of solid wastes:**

- i. **Household or domestic establishments:** The household wastes is disposed off either on public lands or on private contractors' sites.
- ii. **Industrial or commercial establishments:** The solid wastes such as ashes and debris of industrial units are collected and disposed off through public (municipal) facilities at low lying public grounds (landfill areas).

**Harmful effects of solid wastes:**

- i. Solid wastes cause health hazard through creation of obnoxious smell, and harbouring of flies and rodents, which act as carriers of diseases like typhoid, diphtheria, diarrhoea, malaria and cholera, etc.
- ii. These wastes cause frequent nuisance as and when these are carelessly handled, spread by wind and splattered through rain water.
- iii. The dumping of industrial waste into rivers leads to water pollution. River pollution from city-based industries and untreated sewage leads to serious health problems downstream.

## **Urban Waste Disposal**

**Major problems associated with urban waste disposal in India.**

- i. In metropolitan cities like Mumbai, Kolkata, Chennai, Bangalore, etc., about 90 per cent of the solid waste is collected, while 10 per cent left uncollected.
- ii. In most of other small cities and towns in the country, about 30 to 50 per cent of the wastes generated are left uncollected.
- iii. This uncollected waste accumulates on streets, in open spaces between houses and in wastelands leading to serious health hazards.
- iv. Untreated wastes ferment slowly and release toxic biogas to the atmosphere, including methane.
- v. Lack of means to dispose urban waste causes water pollution and other environmental problems. The dumping of industrial waste into rivers is a major cause of water pollution.
- vi. The composition of solid waste material has changed from biodegradable organic material to plastic and other synthetic materials which take more time to decompose.

**These wastes should be treated as resource and utilised for generating energy and compost.**

## **Rural-Urban Migration**

### **Three reasons of rural-urban migration in India:**

- i. Migration from rural to urban areas is caused by high demand for labour in urban areas,
- ii. Low job opportunities in rural areas
- iii. Unbalanced pattern of development between urban and rural areas.
- iv. Due to low opportunities in smaller and medium cities, the poor people generally bypass these small cities and directly come to the mega cities for their livelihood.

### **Problems of Slums**

- i. The "slums", jhuggi-jhopari" clusters and colonies of shanty structures are inhabited by poor people who migrated from the rural areas to urban centres in search of livelihood but could not afford proper housing due to high rent and high costs of land.
- ii. These are environmentally incompatible and degraded areas.
- iii. Slums are residential areas of the least choice, dilapidated houses, poor hygienic conditions, poor ventilation, lack of basic amenities like drinking water, light and toilet facilities, etc.
- iv. These areas are overcrowded having narrow street pattern prone to serious hazards from fire.
- v. Moreover, most of the slum population works in low paid, high risk-prone, unorganised sectors of the urban economy.
- vi. Consequently, they are the undernourished, prone to different types of diseases and illness and can ill afford to give proper education to their children.
- vii. The poverty makes them vulnerable to drug abuse, alcoholism, crime, vandalism, escapism, apathy and ultimately social exclusion.

## **Land Degradation**

### **Concept:**

Deterioration in the quality of agricultural land due to soil erosion, water-logging, salinisation and alkalisation is called land degradation. The land productivity declines temporary or a permanently.

### **Two processes that induce land degradation:**

- i. **Natural causes:** These are a few types of wastelands such as gullied /ravinous land, desertic or coastal sands, barren rocky areas, steep sloping land, and glacial areas, which are primarily caused by natural agents.
- ii. **Human causes:** These are waterlogged and marshy areas, land affected by salinity and alkalinity, degraded shifting cultivation area and under plantation crops, degraded forests, degraded pastures, and mining and industrial wastelands.