



# 16. Pollution of Air and Water



- A.**
1. Air or water containing substances that are harmful to us and our environment is said to be polluted.
  2. A given sample of water is polluted if it tastes bad, it smells bad, and there has been a decrease in the population of fish in the water body from which it has been taken.
  3. Chemical pollution of water is caused by the discharge of harmful chemical substances into water bodies. Pesticides and fertilisers, mineral acids, oils and grease, etc., are examples of chemical pollutants.
  4. **Chemical pollutants** can be one or more of the following substances.
    - (a) Pesticides and fertilisers
    - (b) Synthetic chemicals
    - (c) Oils and grease
    - (d) Mineral acids
    - (e) Metals and their compounds
    - (f) Phosphates from detergents.
  5. Typhoid, dysentery, cholera and hepatitis are water-borne diseases.
  6. Water fit for drinking is called potable water. It should be free from suspended particles like mud and sand, excess of soluble salts, harmful chemicals and harmful bacteria.
  7. Activated charcoal is a special type of charcoal made by heating ordinary charcoal in vacuum. Water can be filtered using activated charcoal, which holds the impurities strongly.
  8. Bleaching powder slowly reacts with water to form chlorine, which kills the germs present in water. It is generally used to purify well water in villages.



- B.**
1. The affinity of CO for haemoglobin is much greater than that of oxygen. So the inhalation of CO cuts off oxygen supply to cells. It can cause disorientation, loss of consciousness, and even death, depending upon the degree of exposure.
  2. One of the methods of reducing air pollution is using compressed natural gas (CNG). Nowadays, CNG is preferred over petrol or diesel in trucks, buses and other vehicles. It contains methane ( $\text{CH}_4$ ), which, on burning, produces much less pollutants than do petrol and diesel.
  3. (a) Sewage should be treated in sewage-treatment plants, which allow only clean water to be discharged into a river or lake.  
(b) Industrial wastes must be treated to remove harmful substances.  
(c) Pesticides and fertilisers must be used in limited quantities.

- C.** 1. The common pollutants of air and their sources are mentioned in the following table.

Pollutant	Source
(a) Carbon monoxide	(i) The incomplete combustion of fuels in vehicles (ii) The incomplete combustion of coal in thermal power plants
(b) Oxides of sulphur	(i) Volcanic eruptions (ii) The burning of sulphur and fossil fuels (iii) The extraction of metals from minerals containing sulphides
(c) Oxides of nitrogen	The combustion of fuels like petrol, diesel, kerosene or coal

2. Fertilisers are discharged into water bodies by run-off from agricultural land. They help aquatic weeds to grow fast. The unchecked growth of weeds makes the water body extremely deficient in dissolved oxygen, badly affecting aquatic life. This process is called eutrophication.  
In Delhi, along a stretch, the Yamuna is choked by water hyacinth—a weed. This is an example of eutrophication. Dead fish are also found in the river as soon as the monsoon begins.
3. Take two similar glasses containing equal volumes of muddy water and label them A and B. (You can prepare muddy water by mixing a teaspoonful of mud from your garden with the water in the glass.) Crush a small crystal of alum (which you can obtain from a store) between the folds of a paper and add it to glass A. Stir the water in the two glasses and allow them to stand side by side. Within a short while, you will find that the mud has settled down with clear water above it in glass A, but the water is still not clear in glass B.

- D.**
1. Carbon dioxide ( $\text{CO}_2$ )
  2. sulphuric and nitric
  3. greenhouse
  4. eroded
  5. microorganisms, oxygen
- E.**
1. (b)
  2. (a)
  3. (d)
  4. (d)
  5. (b)
- F.**
- (a) (iii)
  - (b) (iv)
  - (c) (i)
  - (d) (v)
  - (e) (ii)

