

## Pollution of Air and Water

**Q.1. What is water pollution? Describe some ways in which water gets contaminated:**

**Ans:** The contamination of water of rivers, lakes and ponds etc with some unwanted and harmful substances is called water pollution.

### **MAJOR CAUSES OF WATER POLLUTION:**

- a. Domestic Sewage:** wastes from domestic activities dumped into the water bodies cause water pollution e.g. wastes from kitchens and toilets.
- b. Industrial Sewage:** The discharge of untreated industrial wastes directly into the water bodies pollute water. E.g. Toxins like Hg, Ni and Pb.
- c. Agricultural activities:** Excessive use of some toxic chemical substances like pesticides, insecticides and fertilizers find their way to the water bodies and pollute them.
- d. Human activities:** Bathing of domestic animals and humans, washing of clothes, utensils etc add some pollutants like detergents to the water bodies when thrown untreated into them.
- e. Oil spill:** Due to the accidental leakage of oil from large oil tankers into the water, forms a thin layer of oil on the surface water which damages the aquatic life badly.

**Q.2. Consequences / Results of Water Pollution**

**Or**

### **Harmful Effects of H<sub>2</sub>O Pollution**

**Ans.** The various harmful effects of water pollution are:

- a.** Drinking of polluted water can cause some serious water borne diseases such as cholera, typhoid, diarrhea, jaundice etc.
- b.** Intake of water polluted due to the agricultural wastes can cause death of aquatic animals.
- c.** Intake of water polluted due to some industrial wastes cause serious diseases like blood poisoning, nervous disorders, cancer etc.
- d.** Water pollution leads to biological magnification.

**Q.3. What is air pollution? How can you help to reduce air pollution?**

**Ans.** The contamination of air with harmful gases like oxides of S, N & C, smoke and dust etc is called air pollution.

We can reduce air pollution by the following ways:

- a. Eco-friendly clean fuels like CNG is preferred over petrol and diesel in vehicles.
- b. By doing regular pollution checks of vehicles.
- c. By replacing fuels like coal, wood and kerosene with clean fuels like LPG for domestic purposes.
- d. By installing modern automobile engines in vehicles to reduce the release of carbon monoxide and smoke into the air.
- e. We can reduce increasing green house effect by growing more and more trees.
- f. By using catalytic convertors in automobiles which convert harmful gases into harmless gases.
- g. We should not burn dry leaves, papers and garbage in the open, but should dump these in the garbage pits.

**Q.4. Clear, transparent water is always fit for drinking. Comment.**

**Ans.** Clear and transparent water is not always pure and fit for drinking because it may have some germs and dissolved impurities which cannot be seen by naked eyes.

**Q.5. List some measures that would help your town to ensure the supply of clean water to all its residents.**

**Ans.** Following measures are to be taken to supply clean water in the town:

- a. Water should be treated at water purification plant to make it free from physical, chemical and biological impurities.
- b. Chlorine tablets should be distributed for disinfecting water during rainy season.
- c. People should be made aware and motivated to keep water resources clean.
- d. Strict laws should be enforced on industries which dispose polluted water in the water resources.

- e. Sewage should be treated properly at sewage treatment plants to make it harmless before discharging into the nearby rivers.

**Q.6. Difference between pure air and polluted air.**

**Ans.** Pure air contains various essential gases like nitrogen, hydrogen, oxygen, carbondioxide and other gases like argon, ozone, methane and also water vapours in their definite proportions.

When this composition of air is altered by the addition of harmful substances or gases such as nitrogen oxides, sulphur dioxide, carbon monoxide and other substances like dust, pollens, smoke etc, then the air is said to be polluted.

**Q.7. Explain circumstances leading to acid rain. How does acid rain affect us?**

**Ans.** Acid rain is that rain which contains small amounts of acids formed from acidic gases like sulphur dioxide and nitrogen oxides present in polluted air.

When non-metallic oxides such as sulphur dioxide and nitrogen oxides produced by the combustion of fossil fuels in industries, automobiles etc react with water vapour present in the atmosphere to form acids like  $\text{H}_2\text{SO}_4$  and  $\text{HNO}_3$ .

The damage caused by acid rain is very slow and hence cannot be seen immediately.

**Harmful Effects of Acid Rain:**

- a. Acid rain increases acidity of soil and thereby affecting land, plants and animals.
- b. It also increases acidity of water in water bodies and thereby affecting the aquatic life.
- c. It also corrodes metals, painted surfaces, stone, marble, statues, monuments etc.

**Q.8. Describe the Green House Effect:**

**Ans.** Green House Effect: The atmosphere is transparent to the radiations of sun which are absorbed or trapped by the green house gases like  $\text{CO}_2$ ,  $\text{CH}_4$  (methane), nitrous oxide to make the earth warm. This warming up of earth's atmosphere is called 'Green House Effect'.

**Importance:** It is very important for the existence of various life forms on earth by maintain the suitable temperature on earth, otherwise earth would have been converted into an extremely cold planet without any life form.

**Q.9. Write a note on Global warming:**

Increase in an average temperature of the earth's atmosphere due to the increase in some green houses gases like, CO<sub>2</sub> is called 'Global Warming'.

The addition of green houses gases like CO<sub>2</sub>, CH<sub>4</sub>, CFC's, nitrogen oxides to the atmosphere by various human activities leads to an increase in the average earth's atmosphere as these gases have tendency to absorb the infrared radiations reflected by the earth.

**Consequences / Harmful Effects:**

- a. Global warming may result in severe weather and climatic changes on earth.
- b. It can lead to the melting of ice caps, glaciers of the earth which will lead to the rise in the sea level abnormally.

**Q.10. Why does the increased level of nutrients in the water affect the survival of aquatic organisms?**

**Ans.** Some agricultural wastes like fertilizers if used excessively are washed into the water bodies and pollute them. Nitrates and phosphates present in these fertilizers act as nutrients for algae and help them to grow rapidly. Death of these algae provide food to the decomposes like bacteria that use dissolved O<sub>2</sub> for the process of decomposition resulting in the decrease in O<sub>2</sub> level of H<sub>2</sub>O bodies. This leads to the suffocation and death of aquatic organisms. This situation is known as eutrophication.

**Q.11. Describe the threat to the beauty of Taj Mahal.**

**Ans.** Acid rain that has resulted due to the air pollution caused by oxides of sulphur and nitrogen is the major threat to the beauty of the Taj Mahal.

- a. The acids present in acid rain react with the marble of Taj Mahal and corrode it slowly.
- b. The suspended particulate matter (soot) in the smoke is responsible for discolouring of white marble of Taj monument by turning it yellowish.