

# Environmental Issues

## 16 Chapter

- 1. What are the various constituents of domestic sewage? Discuss the effects of sewage discharge on a river.**

**Ans:**

There are four kinds of impurities of domestic sewage:

- (i) Suspended solids: They are the soil particles like sand and silt.
- (ii) Colloidal particles: These particles include inorganic and organic materials like fecal matter, bacteria, paper, and cloth.
- (iii) Dissolved solids: These particles include nitrates, phosphates, ammonia, sodium, calcium, and other nutrients.
- (iv) Pathogens: Domestic sewage contains pathogens of various diseases like typhoid, cholera, dysentery, diarrhea, etc.

Effect of sewage discharge on the river are:

- (i) Eutrophication.
- (ii) Increase in the growth of pathogenic bacteria.
- (iii) Aging of the river where silt and decaying matters start accumulating and filling the river.
- (iv) Increase in Biological Oxygen Demand.
- (v) Loss of flora and fauna of that river.

- 2. List all the wastes that you generate, at home, school or during your trips to other places. Could you very easily reduce the generation of these wastes? Which would be difficult or rather impossible to reduce?**

**Ans:** The wastes produced at homes, school, or during trips to other places are plastic containers, paper, electronic goods, leftover food, food packages, disposable glasses, polythenes, etc.

Yes, the wastes are often reduced through judicious use of material by changing our habits and lifestyles.

Out of these, polythene and plastic material are hard to dispose of as they are non-biodegradable but they can be reduced as recycled back.

- 3. Discuss the causes and effects of global warming. What measures need to be taken to control global warming?**

**Ans:** An increase in the atmospheric concentration of greenhouse gases has

resulted in a rise of atmospheric temperature by 0.6°C (global warming) during the 20th century. Confirmation on this is given by the intergovernmental panel on climate change (IPCC) in its reports of 1991 and 1992. In the future, this predictable change affects the climate, sea level, range of species distribution, food production as well as fisheries resources in the oceans.

**Causes of global warming:**

- (i) Rise in the concentration of greenhouse gases.
- (ii) Increment in the use of automobiles and fossil fuels.
- (iii) Deforestation.
- (iv) Emission of CFC and aerosol from refrigerator and airplane.
- (v) In the lower atmosphere, there is an increase in particulate matter.

**Effects of global warming:**

- (i)  $\text{CO}_2$  fertilisation effect.
- (ii) The species of plants that are sensitive to temperature will die with a sudden rise in temperature and their place will be taken over by scrub vegetation.
- (iii) Loss of biodiversity.
- (iv) Rise in sea level.
- (v) Possibilities of drought and floods.
- (vi) Eruption of plant disease and pests.
- (vii) Change in rainfall pattern.

Methods adopted to reduce the atmospheric concentration of greenhouse gases are:

- (i) Greenhouse gas emissions can be reduced by limiting the use of fossil fuels, and by developing alternative renewable sources of energy (wind energy, solar energy, etc.)
- (ii) For photosynthetic utilization of  $\text{CO}_2$ , the vegetation cover, mainly the forests, can be increased.
- (iii) The use of nitrogen fertilizers can be minimized in agriculture for reducing  $\text{N}_2\text{O}$  emissions.
- (iv) Substitutes can be developed for chlorofluorocarbons.

**4. Match the items given in column A and B:**

Column A	Column B
(a) Catalytic converter	(i) High noise level Particulate matter
(b) Electrostatic precipitator	(ii) Carbon monoxide and nitrogen

	<b>oxides</b>
<b>(c) Earmuffs</b>	<b>(iii) High noise levels</b>
<b>(d) Landfills</b>	<b>(iv) Solid wastes</b>

**Ans:**

(a) Catalytic Converter	(ii) Carbon monoxide and nitrogen oxides
(b) Electrostatic Precipitator	(i) Particulate matter
(c) Earmuffs	(iii) High noise level
(d) Landfills	(iv) Solid wastes

**5. Write critical notes on the following:**

**(a) Eutrophication**

**Ans:** It is the natural aging of a lake by biological enrichment of its water because of excessive growth of algae, plants, and animals in water bodies due to the nutrient enrichment, particularly with nitrogen and phosphorus. Thus, it is natural and cultural or accelerated. It results in the loss of biodiversity and causes chemical accumulation in the food chain and aging of the water body.

**(b) Biological magnification**

**Ans:** An increase in the concentration of persistent toxic chemicals at successive trophic levels is called biological magnification or biomagnification. It is because of a toxic substance that gets accumulated by an organism that cannot be metabolized or excreted and is thus passed onto the next trophic level, e.g., DDT.

**(c) Groundwater depletion and ways for its replenishment**

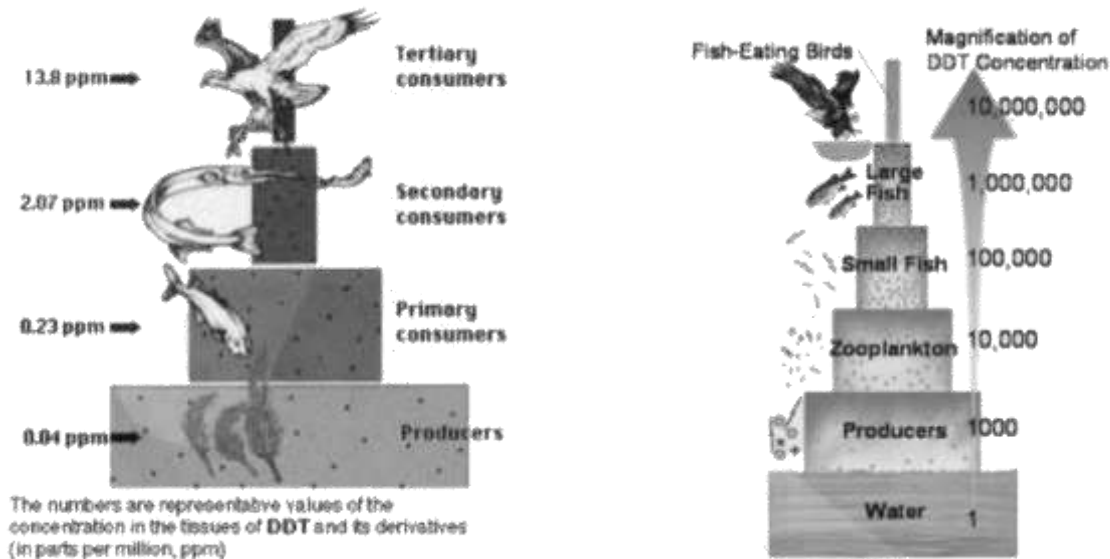
**Ans:** It is a term that is often defined as long-term water-level declines which are caused by sustained groundwater pumping. Groundwater depletion is experienced by many areas of India.

The most severe outcome of excessive groundwater pumping is the water table, which can be lowered in the presence of water. The well has to be deepened, or drill a new well, or at least attempt to lower the pump if groundwater level declines too far.

Measures for replenishing groundwater:

(i) Prevent overexploitation of groundwater

- (ii) Improvement in water use and reducing water demand
- (iii) Rainwater harvesting
- (iv) Deforestation can be prevented and plantation of more trees can be initiated.



**6. Why does the ozone hole form over Antarctica? How will enhanced ultraviolet radiation affect us?**

**Ans:** A large amount of ODS (Ozone Depleting Substances) like CFCs, N<sub>2</sub>O, halons, SO<sub>2</sub>, CH<sub>4</sub>, Cl (Chlorine radicals)-are released by advanced countries like the USA, Japan, European countries, and throughout the world. In the stratosphere, these are released, they drift towards poles and reach there before the coming of winter. In winter (temp. -85°C) over Antarctica, ice clouds are formed and no sunrise is received in polar areas. UV rays catalyze the release of Cl atoms from CFCs. With the coming of the spring season, Cl- atoms react with ozone in the presence of sunlight and convert O<sub>3</sub> into O<sub>2</sub> causing ozone depletion/thinning of ozone shields in the stratosphere called ozone hole. This hole disappears in summer due to the free mixing of air in Antarctica with the rest of the global air.

Effect of Enhanced UV Radiation,

- (i) Snow blindness or inflammation of the cornea
- (ii) Skin cells get damaged and development of skin cancer occur
- (iii) Damage to nucleic acids and proteins,
- (iv) Immunity gets reduced.
- (v) In humans, there are plenty of cataracts.

**7. Discuss the role of women and communities in the protection and conservation of forests.**

**Ans:** Amrita Bishnoi Wildlife protection project. It was in 1731, the king's men attempted to cut trees. King of Jodhpur (Rajasthan), required wood for his new palace so he ordered his men to cut trees in a forest close to the village inhabited by Bishnois. Amrita Devi with her three daughters and more than 360 other Bishnois lost their lives in saving trees and became martyrs. Later in 1974 'Chipko-movement' was started by Sunderlal Bahuguna and others to prevent the cutting of trees. Enormous bravery was shown by the people of Bishnois in protecting trees from the axe of contractors by hugging them.

**8. What measures, as an individual, would you take to reduce environmental pollution?**

**Ans:** Measures taken to reduce environmental pollution are:

- (i) Reducing the use of CFC.
- (ii) Disposing of waste safely.
- (iii) Reducing the use of polythene.
- (iv) There should be no waste disposal in water bodies.
- (v) Making automobiles pollution-free.
- (vi) Noise pollution should be prevented by avoiding the use of firecrackers/TV/musical instruments at permissible limits.
- (vii) Plantation of trees should be promoted in school, around the residence.

**9. Discuss briefly the following:**

**(a) Radioactive wastes**

**Ans:** Radioactive wastes consisting of materials that are radioactive and for which there is no such practical use. These are produced by nuclear reactors, nuclear fall-out, manufactured, natural radioactive wastes, and release of radiation therapy. An increased risk of cancer, birth defects, and infertility are few adverse effects caused by nuclear wastes. Thus, nuclear waste is an extremely vigorous pollutant.

**(b) Defunct ships and e-wastes**

**Ans:** Defunct ship dismantle is a technically complex process, which is harmful to both the environment and human health.

Defunct ships include toxicants such as asbestos, mercury, etc. The workers are exposed to toxic chemicals. In the vicinity of the ship-breaking yard, the coastal area has also become polluted.

It is accepted at the international level that there is uncertainty about the suitable controls for the dismantling of the vessels and there is an essential need to establish a specific enforceable control framework. Electrowater-level

Groundwater electronic wastes that are irreparable computers and other electronic goods are generated by developed countries. If treated properly, it is an important source of secondary raw materials; however, it is the major source of toxins if not treated properly. Thus, recycling is the only solution left for the treatment of e-wastes provided it is carried out in an environmentally friendly manner.

**(c) Municipal solid wastes**

**Ans:** It consists of daily items such as product packaging, furniture, clothing, bottles, batteries, etc. Source reduction, recycling, and Composting are several municipal solid waste management practices. Source reduction involves altering the design, manufacture, or use of products and materials. To reduce the toxicity, the level of groundwater has to be maintained. Recycling diverts items such as paper, glass, plastic, and metals into new products. Composting decomposes organic waste like food scraps and yard trimmings with microorganisms, thus producing a humus-like substance.

**10. What initiatives were taken for reducing vehicular air pollution in Delhi? Has air quality improved in Delhi?**

**Ans:** The several initiatives are: -

- (i) Introduction of CNG
- (ii) Enforcement of pollution control law
- (iii) Introduction of green zones
- (iv) Use of unleaded fuels
- (v) Old vehicles can be replaced with a new one.
- (vi) Use of catalytic converters in vehicles.
- (vii) For vehicles, the application of Euro II norms is adopted.

**11. Discuss briefly the following:**

**(a) Greenhouse gases**

**Ans:** Trapping the heat of the sun in the earth's atmosphere by increasing atmospheric temperature effects are called greenhouse gases (GHGs). CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, and CFC cause the greenhouse effect. The temperature of the earth would go down to -18°C in the absence of the gases. There will be adverse effects of higher GHGs, (i) Melting of polar ice caps and mountain snowcaps resulting in rising sea levels threatening concentration of many islands and coastal areas, (ii) Climate change like El Niño (a phenomenon that disrupts normal weather), increased floods and drought.

**(b) Catalytic converter**

**Ans:** To reduce the emission of poisonous gases like nitrogen oxides, carbon monoxide, and non-reacting hydrocarbons in automotive emission Catalytic converters are used. It is made up of platinum, palladium, and rhodium and is used as a catalyst. It converts unburnt hydrocarbons into water and CO<sub>2</sub>. The precaution needed to be taken is that not to use gasoline having lead as lead inactivates the catalysts of the converter.

**(c) Ultraviolet B**

**Ans:** Out of the three types, Ultraviolet B is the one that is responsible for invisible light rays given off by the sun. Through the ozone layer, in attenuated form, Ultraviolet B is penetrated via the ozone layer and reaches earth. Due to thinning of the ozone shield over the equator, this is moreover equator than poles. It leads to skin cancer, reduction in the rate of photosynthesis, In phytoplanktons, it reduces the diversity of the aquatic ecosystem.