WATER POLLUTION

What is water pollution?

- **Water pollution** is the contamination of water bodies (e.g. lakes, rivers, oceans and groundwater), very often by human activities.
- Any change or modification in the physical, chemical and biological properties of water that will have a detrimental consequence on living things is water pollution.
- It occurs when pollutants are discharged directly or indirectly into water bodies without enough treatment to get rid of harmful compounds.
- Pollutants get into water mainly by human causes or factors.
- Water pollution is the second most imperative environmental concern along with air pollution.

Sources of Water Pollution

- There are various classifications of water pollution.
- The two chief sources of water pollution can be seen as
- Point source
- Non-Point source

Point source

Those sources which discharge water pollutants directly into the water are known as point sources of water pollution.

Oil wells situated near water bodies, factories, power plants, underground coal mines, etc. are point sources of water pollution.

Non-Point source

Those sources which do not have any specific location for discharging pollutants, in the water body are known as non-point sources of water pollution.

Run-offs from agricultural fields, lawns, gardens, construction sites, roads and streets are some non-point sources of water pollution.

What are the types of water pollution

1. **Nutrients Pollution**

•Some wastewater, fertilizers and sewage contain high levels of nutrients.

•If they end up in water bodies, they encourage algae and weed growth in the water.

•This will make the water undrinkable, and even clog filters.

•Too much algae will also use up all the oxygen in the water, and other water organisms in the water will die out of oxygen starvation.

2. **Surface water pollution**

•Surface water includes natural water found on the earth's surface, like rivers, lakes, lagoons and oceans.

•Hazardous substances coming into contact with this surface water, dissolving or mixing physically with the water can be called surface water pollution.

3. **Oxygen Depleting**

•Water bodies have micro-organisms including aerobic and anaerobic organisms.

•When to much biodegradable matter end up in water, it encourages more microorganism growth, and they use up more oxygen in the water.

•If oxygen is depleted, aerobic organisms die, and anaerobic organism grow more to produce harmful toxins such as ammonia and sulfides.

4. Ground water pollution

•When humans apply pesticides and chemicals to soils, they are washed deep into the ground by rain water.

•This gets to underground water, causing pollution underground.

•This means when we dig wells and bore holes to get water from underground, it needs to be checked for water pollution.

5. **Suspended Matter**

•Some pollutants (substances, particles and chemicals) do not easily dissolve in water.

•This kind of material is called particulate matter.

•Some suspended pollutants later settle under the water body.

•This can harm and even kill aquatic life that live at the floor of water bodies.

6. **Chemical Water Pollution**

•Many industries and farmers work with chemicals that end up in water.

•These include chemicals that are used to control weeds, insects and pests.

•Metals and solvents from industries can pollute water bodies.

•These are poisonous to many forms of aquatic life and may slow their development, make them infertile and kill them.

Effects of Water Pollution

- The effects of water pollution are varied and depend on what chemicals are dumped and in which locations.
- Many water bodies near urban areas are highly polluted.
- This is the result of both garbage dumped by individuals and dangerous chemicals legally or illegally dumped by manufacturing industries, health centers, schools and market places.

Health Effects

- Consumption of polluted water is a major cause of ill health in India.
- Polluted water causes some of the deadly diseases like cholera, dysentery, diarrhea, tuberculosis, jaundice, etc.
- About 80 per cent of stomach diseases in India are caused by polluted water.

Effect of Nutrients- Eutrophication

- Water supports aquatic life because of the presence of nutrients in it.
- Excess fertilizers from agricultural fields may mix with surface water and may get drained into water bodies (surface runoff).
- The enrichment of water with nutrients such as nitrates and phosphates that triggers the growth of green algae is called **eutrophication.**
- This fast growth of algae followed by decomposition depletes the water body of its dissolved oxygen.
- As a result aquatic animals die of oxygen shortage.

Sewage and/or fertilizer run off from fields

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Enriched nutrient content in lakes (Eutrophication)

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Algae multiply to produce an ‘algal bloom’

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Algae use up oxygen and begin to die

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Decomposers (bacteria) multiply and use more oxygen

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Organisms (such as fish) die due to lack of oxygen

Control of water pollution

- Recycling and Reuse of water
- Treating industrial effluents before discharging into rivers, separate channels for river and sewage water
- Avoid contamination of rivers, lakes and ponds by washing clothes, bathing. etc.
- Not throwing waste, food materials, paper, biodegradable vegetables and plastic into open drains.