

**1. Depleting Natural Resources**

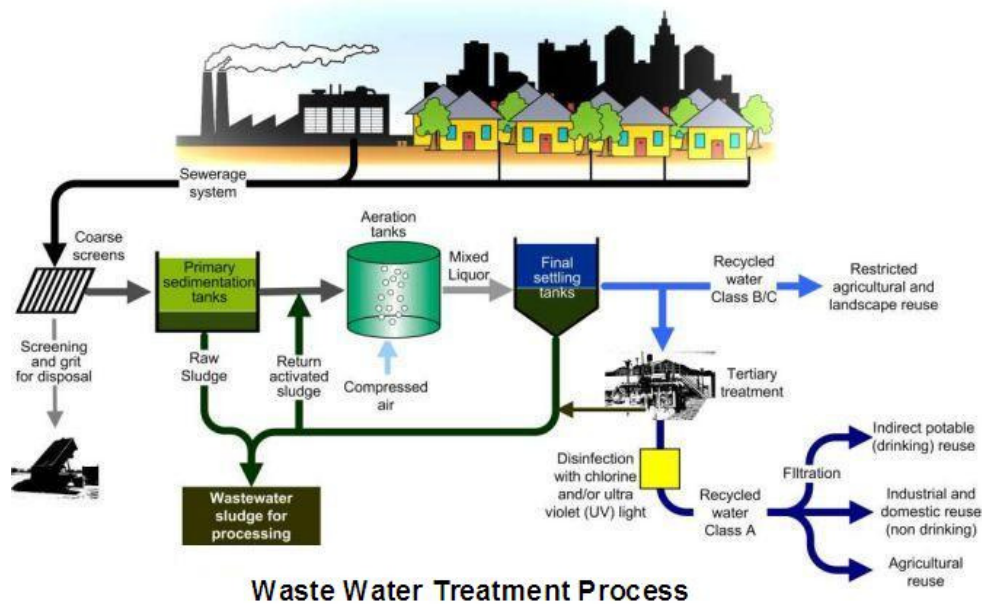
- **Deforestation:** clearing of forest to meet demand for land (building and agricultural uses) and wood (construction, papers and fuels)
  - Soil erosion—most fertile topsoil washed away by heavy rain.
  - Flooding—eroded soil deposited in rivers blocking flow of water.
  - Desertification—water evaporates quickly from barren soil and hardened.
  - Climate changes—change in water cycle (rainfall) and temperature.
  
- **Uncontrolled fishing practices:**
  - Overfishing due to increasing demand.
  - Indiscriminate fishing --Drift net kill turtles, sharks and dolphins.
  - Destruction of marine habitats- trawling, dredging, toxic cyanide and explosive fishing.
  - Decrease of fish population due to slow reproduction rate and drop in population.

**2. The conservation is the protection and preservation of natural resources in the environment so as;**

- a. To prevent extinction of plant and animal species.
- b. To maintain a stable and balanced ecosystem such as water and carbon cycle.
- c. To main a large gene pool for future genetic engineering.
- d. To conserve marine life as they are major food source for human.
- e. To enable scientific study of wildlife.
- f. To preserve nature scenery for outdoor recreation activities.
- g. To maintain biodiversity for long term benefits such as uses as drugs and insecticides, foods & industrial uses (rubber latex, rattan)

**3. Areas for Conservation**

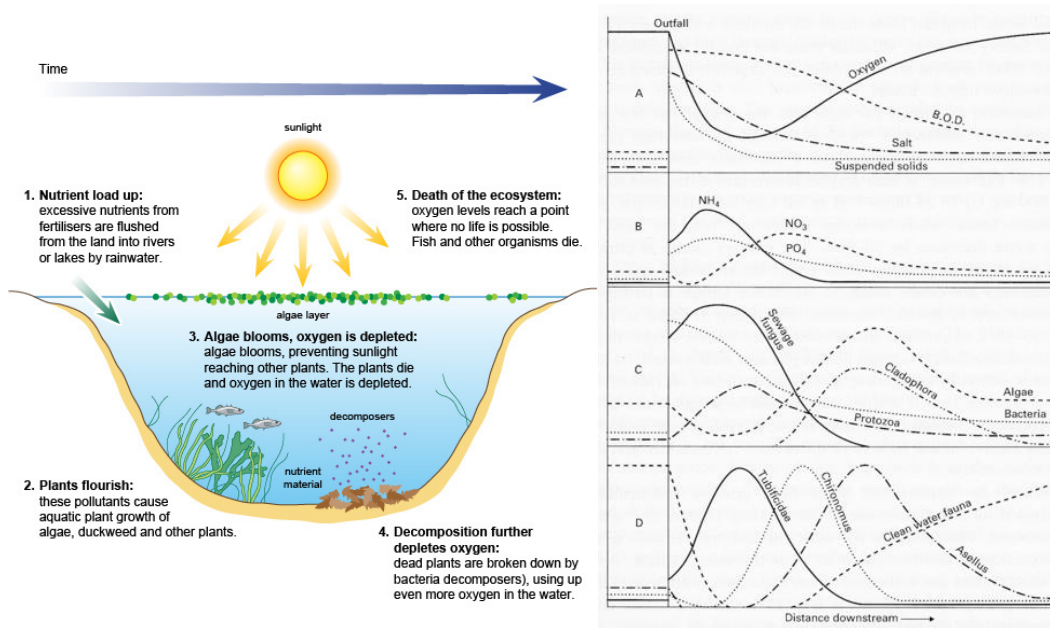
- We can help conservation by (a) Keeping the environment clean (b) managing the use of earth natural resources (c) protecting wildlife.
  
- **Environmental biotechnology:** sewage treatment process.
  - Stage 1: sedimentation tanks to remove heavier sandy materials.
  - Stage 2: aeration tanks with bacteria to digest the organic waste.
  - Stage 3: filtration to remove solid sludge for anaerobic sludge digestion by bacteria.
  - Stage 4: clean filtrate is charged into river or sea. Sludge is dried and use as fertilizers.



- **Conservation of forests:**
  - Management of timber production and reforestation..
  - Designation of forest reserves
  
- **Conservation of fishing ground:**
  - a. Using environmental friendly fishing gear--banning use of drift net and fishing gears which destroy marine habitats.
  - b. Regulating catch size and fishing periods—use net with defined mesh size and limit the period of fishing and number of ships in fishing ground.
  - c. Laws to protect endangered species.
  - d. Raising endangered species in hatcheries to speed up the population recovery rate.

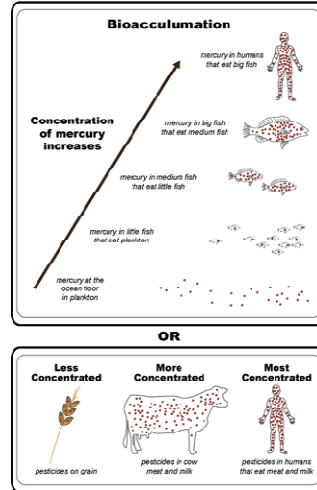
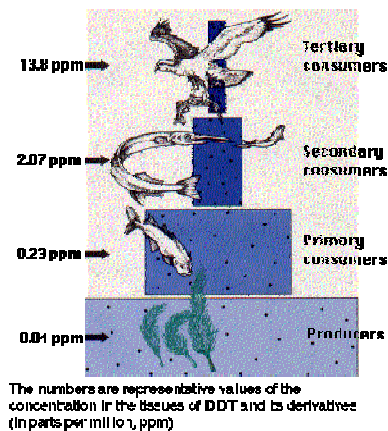
#### 4. Pollution ( Water pollution )

- **Effect of untreated sewage discharge: eutrophication**
  - Stage 1: Nitrates and phosphates in untreated sewage lead to excessive grow of algae and water plants.
  - Stage 2: Submerge algae and plants die due to lack of sunlight. Bacteria feed on the dead plants and grow rapidly.
  - Stage 3: Organisms in water die due to lack of oxygen (in particular at night when no photosynthesis take place)
  
- **Inorganic waste such as excessive use of fertilizers**
  - Organisms in polluted water become contaminated
  - Food poisoning effect of consumers due to heavy metal such as lead, mercury, zinc.



• **Insecticides**

- **Bioaccumulation:** Certain chemicals (e.g. DDT) are not excreted from the body of organism but accumulate in their bodies. These chemicals are then passed down along the food chain and become concentrated in the body of the top consumers.



- Top consumers suffer toxic effect (e.g. thin egg cell of fish eagles)

**5. Recycling of solid and liquid waste bring us these benefits:**

- Example: Plastics, metals, papers, glass.
- Reduces wastes disposal.
- Reduces environmental pollution.
- Conserve resources.
- Saves energy and money.