



## Chapter-18 Wastewater Story

### NOTES :

Water is one of the most essential components of all living beings including micro-organisms. We use water for drinking, bathing, cooking, laundries etc. Sources of water are ponds, lakes, wells, springs, sea, rivers, rain etc. Presence of unwanted substances in water bodies is called water pollution and the unwanted substances are called pollutants.

- The water which is not fit for used to us is called wastewater. Examples water from toilet, kitchen, laundries, industries etc.
- The United Nations announced the International Decade for Action 'Water for Life' (2005-2015). During this decade, they aimed to reduce by half the number of who do not have access to safe drinking water.
- The wastewater released by homes, industries, hospitals, agricultural activities etc. is called sewage.
- The process of removing pollutants before it enters a water body or for reused is called cleaning of water.
- The process of wastewater treatment is commonly known as sewage treatment.
- A sewage treatment plant is a place where sewage is purified to remove the pollutants to obtain clean water.
- Sewage is a complex mixture containing suspended solids, organic and inorganic impurities, nutrients and disease causing bacteria and other microbes.
- The network of big and small pipes that brings clean water and another pipes takes away wastewater is called sewer.
- Sewerage is like a transport system that carries sewage from a point of being produced to the point of disposal i.e. treatment plants.
- Manhole is a hole with a detachable cover that lead down to a sewer or drain.
- Aeration is the process of circulating air through, to mix with or dissolve in a liquid or substance.
- Solid impurities like faeces that settle down at the bottom of the tank during wastewater treatment is called sludge.
- Grit are small loose particles of stone or sand.
- Treatment of wastewater involves physical, chemical and biological processes.

- Wastewater treatment involves the following steps:
    - 1) Firstly the wastewater is passed through bar screens to remove large objects like rag, cans, plastic packets, napkins etc.
    - 2) Then the water is taken to grit and sand removing tank and allow to settle sand, grit and pebbles by decreasing the speed of the incoming wastewater.
    - 3) The water is allowed to settle in a large tank and remove solid impurities like faeces from the bottom called sludge with a scraper. A skimmer removes oil and grease from it. Water so cleared is called clarified water.
      - I. The sludge is decomposed by anaerobic bacteria in a separate tank to produce biogas.
    - 4) Air is pumped into clarified water to grow aerobic bacteria. Bacteria consume all the unwanted matter still remaining in clarified water.
  - The suspended microbes settle at the bottom of the tank after air is pumped into the clarified water is called activated sludge.
  - About 97% of activated sludge is water
  - Dried sludge is rich in nutrients and is used as organic manure.
  - The treated water is discharged into a sea, a river or into the ground. The wastewater treatment reduce pollutants to a level where nature can take care of it.
  - Chemicals like chlorine and ozone are used to disinfect water.
  - By planting eucalyptus trees all along sewage ponds, they absorb surplus wastewater and release pure water vapour into the atmosphere.
  - Sludge and biogas are the by-products of wastewater treatment.
  - Open drains, mud pools are breeding place for flies, mosquitoes and other organisms which cause disease.
  - Vermi-processing toilet is a design of a toilet in which humans excreta is treated by earthworm. In this process, human excreta is completely converted to a vermi cake. It is hygienic as it reduces diseases and increase in soil fertility.
  - Sanitation means maintaining cleanliness and dealing with sewage.
  - Poor sanitation leads to diseases like cholera, typhoid, polio, meningitis, hepatitis and dysentery.
  - Another alternative arrangement for sewage disposal to improve sanitation is to encourage low cost onsite sewage. Example septic tanks, chemical toilets, composting pits.
  - In public places we must dispose the waste materials in proper place. We should not scatter litter anywhere.
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