

Wastewater Story

Water mixed with waste matter is known as **waste water**.

1. **Sewage** is the wastewater carried away in sewers or drains.
2. It is released from homes, industries, offices, hospitals, etc.
3. It is a mixture of various contaminants, which include the following:
 - Suspended solids
 - Organic impurities such as animal waste, urine or human faeces, pesticides, kitchen waste, etc.
 - Inorganic impurities such as chemicals (nitrates, phosphates, etc.)
 - Nutrients such as phosphorus and nitrogen
 - Disease-causing bacteria and other microbes

1. Water is necessary for every form of life. Clean water is the basic requirement of humans.
2. Cleaning of water is the process of separating pollutants from the wastewater before it is released into a water body or is reused.
3. All the waste matter created is sewage and is carried away in sewers.
4. From the sewer, the waste matter enters the sewage treatment plant for disposal.

Sewage treatment plant:

1. It reduces the pollutants in waste matter.
2. Sludge is the end product of sewage treatment. It is a thick, viscous matter that settles at the bottom of the tank.
3. Sludge is decomposed by anaerobic bacteria to form biogas.
4. Biogas is used as fuel or to produce electricity.
5. Dried sludge is used as manure to increase the fertility of soil.
6. Chemicals such as chlorine and ozone are used to disinfect water before releasing it into the distribution system.

Sewage Treatment Process:

The process of removing the contaminants from sewage water is done through various stages. This entire process is known as the sewage water treatment process.

In waste water treatment plants, the wastewater is treated through physical, chemical, and biological processes to remove the physical, chemical and biological contaminants.

Following are the various processes involved in the treatment of wastewater in a treatment plant

Bar screening:

Purpose: To remove large-sized objects such as rags, sticks, cans, plastic packets, napkins, papers, etc. from the sewage.

Grit and sand removal:

Purpose: To allow sand, pebbles and grit to settle down at the bottom of the tank.

Clarification:

Purpose: To remove the sludge that settles at the bottom of the tank by a skimmer.

Aeration:

Purpose: To allow the decomposition of human wastes, food wastes, soaps and other pollutants that remain in the clarified water by aerobic bacteria.

Natural Cleaning Up and Disinfection:

Purpose: To separate microorganisms from the water and disinfect it with the help of chlorine or ozone.

Disinfecting by chlorination:

Purpose: It is used to kill certain bacteria and other microbes in tap water as chlorine is highly toxic. It is used to prevent the spread of waterborne diseases such as cholera, dysentery, and typhoid.

House keeping practices to minimize addition of pollutants to water

1. Always throw oil and fats in dustbins. Do not throw them into drains as they harden and block the pipes. Also, deposition of fat or oil in drain reduces water filtration.
2. Do not throw chemicals such as paints, solvents, insecticides, etc. into drains. Chemicals kill the microbes that purify water.
3. Do not throw used tea leaves, food remains, cotton, etc. into drains. It chokes the drain and does not allow free flow of oxygen, thereby hampering the degradation of waste matter.

Disease-causing microbes

1. Poor sanitation and contaminated water are the causes of several water-borne diseases such as cholera, typhoid, meningitis, hepatitis, etc.
2. Untreated human excreta may cause water and soil pollution.

Methods of sewage disposal

1. Use low cost onsite sewage disposal systems such as septic tanks, chemical toilets, composting pits, etc. to improve sanitation.
2. Maintain sanitation at public places
3. Do not throw litter in public places. Always use dustbins.
4. It is our duty to maintain water sources in a healthy state by adopting good sanitation practices.

Activities at public places to reduce waste generation

- Large numbers of people visit public places such as bus stops, airports, railway stations, hospitals etc. everyday. It should be the responsibility of every individual to keep these places clean.
- Every citizen must try to keep public toilets neat and clean. People should not excrete in the open places as it poses a serious health hazard.

Improper sanitation increases the generation of waste materials and pollutants. It contaminates the water, thereby causing a variety of water-borne diseases.