EDUCATION SOURCE
A Source of Your Way to Success

WASTE WATER STORY

Chapter: 18

SCIENCE
CLASS: - 7TH
Educationsource.in

Chapter: 18
WASTE WATER STORY

Q1: Fill in the blanks:

(a) Cleaning of water is a process of removing Pollutants_**.**

(b) Wastewater released by houses is called sewage _**.**

(c) Dried sludge **is used as manure.**

(d) Drains get blocked by cooking oil_ **and** fats_**.**

Q2: What is sewage? Explain why it is harmful to discharge untreated sewage into rivers or seas.

Ans: - Sewage refers to the waste and wastewater generated from human activities, such as domestic, commercial, and industrial processes. It consists of a combination of water, organic matter, chemicals, and various contaminants, including human excreta, food scraps, soaps, detergents, oils, and other harmful substances.

When sewage is discharged into rivers or seas without proper treatment, it poses significant environmental and public health risks like Spread of Diseases, Oxygen Depletion, Water Contamination, Altered Ecosystems and many more.

Q3: Why should oils and fats be not released in the drain? Explain.

Ans: - Oils and fats should not be released in the drain because they can cause pipe clogs and blockages. When poured down the drain, oils and fats solidify and adhere to the inside of pipes, leading to restricted or blocked wastewater flow. Additionally, improper disposal of oils and fats can harm the environment by forming fatbergs in sewer systems and polluting water bodies.

Q4: Describe the steps involved in getting clarified water from wastewater.

Ans: - The purification of water involves several steps to ensure its cleanliness are: -

a) **Screening:** The water is passed through bar screens to remove physical impurities such as stones, plastic bags, and cans. These objects are filtered out, preventing them from entering the purification process.

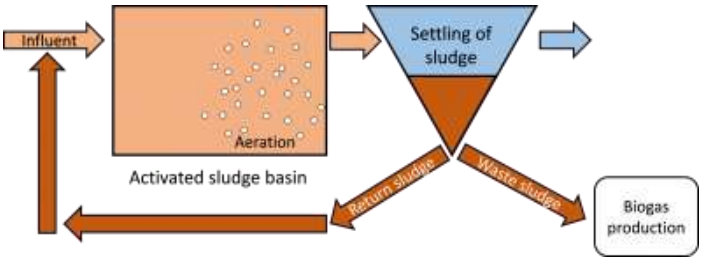
b) **Grit and Sand Removal:** The water is then taken to a tank where grit and sand settle down by the process of sedimentation. This helps in removing small solid impurities from the water.

c) **Sludge Collection:** The solid impurities are collected from the bottom of the tank. This collected material is referred to as sludge.

d) **Chlorination:** The clarified water goes through an aerator, where it is mixed with air. This process helps in removing any dissolved gases, unpleasant odours, and further improves the water's taste and smell. After aeration, chlorination is carried out. Chlorine is added to the water to disinfect it and kill disease-causing bacteria.

Q5: What is sludge? Explain how it is treated.

Ans: - Sludge is a semi-solid residue that is formed during the wastewater treatment process. It consists of the solid materials and impurities that settle down at various stages of treatment. Sludge contains a mixture of organic matter, bacteria, debris, and other substances.



This sludge is transfer to another tank and a decomposed by anaerobic bacteria to produce biogas. This biogas used as a low-cost fuel for heating, cooking, etc.

Q6: Untreated human excreta are a health hazard. Explain.

Ans: - Untreated human excreta, including faeces and urine, present significant health hazards. They contain harmful pathogens like bacteria, viruses, and parasites that can cause diseases such as cholera, typhoid, and dysentery. If left untreated, these pathogens can easily spread through contaminated water sources, food, and improper handling, leading to outbreaks and endangering public health.

Q7: Name two chemicals used to disinfect water.

Ans: - Chlorine and Ozone.

Q8: Explain the function of bar screens in a wastewater treatment plant.

Ans: - Bar screens in a wastewater treatment plant serve the function of removing large physical impurities from the incoming wastewater. They consist of parallel bars or rods placed closely together, creating a barrier through which the water passes. The screens effectively trap and prevent objects like sticks, rags, plastics, and cans from entering the treatment process.

Q9: Explain the relationship between sanitation and disease.

Ans: - Sanitation and disease are closely interconnected. Poor sanitation conditions, such as inadequate access to clean water, lack of proper toilets, and improper waste management, contribute to the spread of diseases. Contaminated water sources, open defecation, and improper disposal of waste can introduce pathogens into the environment, leading to the transmission of

diseases like cholera, typhoid, diarrhoea, and other waterborne and sanitation-related illnesses.

Q10: Outline your role as an active citizen in relation to sanitation.

Ans: - The important role as an active citizen in relation to sanitation are: -

a) **Raising Awareness**: I can educate others about the importance of sanitation through conversations, social media, or organizing community awareness campaigns.

b) **Advocacy:** I can actively engage with local authorities and policymakers to advocate for improved sanitation infrastructure, policies, and funding in my community.

c) **Personal Hygiene Practices:** I can lead by example by practicing good personal hygiene, such as handwashing, using clean toilets, and proper waste disposal, and encourage others to do the same.

d) **Collaboration:** I can collaborate with local organizations, community groups, and NGOs working in the field of sanitation to support their initiatives, volunteer my time, or contribute resources for sanitation projects.

Q11: Study the following statements about ozone:

(a) It is essential for breathing of living organisms.
(b) It is used to disinfect water.
(c) It absorbs ultraviolet rays.
(d) Its proportion in air is about 3%.
Which of these statements are correct?
(i) (a), (b) and (c)
(ii) (b) and (c)
(iii) (a) and (d)
(iv) All four

Ans: - (ii) (b) and (c)

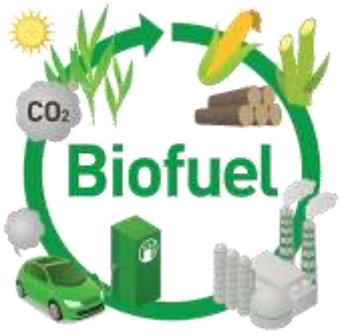
Key Words

a) Aeration: The process of introducing air or oxygen into wastewater to promote the growth of aerobic microorganisms that help in breaking down organic matter and pollutants.

b) Aerobic bacteria: Bacteria that require oxygen to survive and carry out their metabolic processes. They play a crucial role in wastewater treatment by consuming organic matter and converting it into harmless by-products**.**

c) Anaerobic bacteria: Bacteria that can survive and thrive in environments without oxygen. They are involved in anaerobic processes, such as anaerobic digestion, where they break down organic matter in the absence of oxygen and produce biogas.

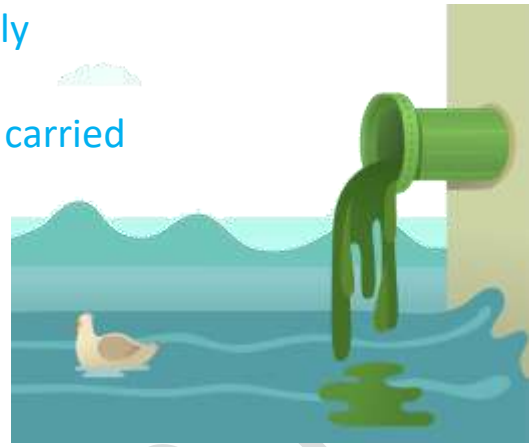
d) Biogas: A mixture of gases, primarily methane and carbon dioxide, produced through the anaerobic digestion of organic matter, including wastewater and sludge. Biogas can be used as a renewable energy source for heating, electricity generation, or cooking.



e) Contaminant: Any substance or organism that is present in wastewater or any other environment in quantities or under conditions that may cause harm or pollution. Contaminants can include chemical pollutants, pathogens, or other harmful substances.

f) Sanitation: The practice of maintaining cleanliness and hygiene to prevent the spread of diseases and ensure the well-being of individuals and communities. It includes measures such as safe water supply, proper sanitation facilities, waste management, and personal hygiene practices.

g) Sewage: The waste and wastewater, primarily consisting of human excreta, used water from households, institutions, and industries, that is carried through sewers for disposal or treatment.



h) Sewer: An underground pipe used to carry wastewater, including sewage, from buildings to a wastewater treatment plant or a point of disposal.

i) Sewerage: The entire system of sewers, pipes, and other infrastructure used for the collection, transportation, and treatment or disposal of wastewater and sewage.

j) Sludge: The semi-solid residue that remains after the treatment of wastewater.

k) Wastewater: Any used water that has been contaminated by human activities, including domestic, industrial, or agricultural processes.