

VII CLASS SCIENCE- OPEN TEXTBOOK BASED ASSESSMENT

WATER - A WONDERFULL LIQUID

Water is a transparent fluid which forms the world's streams, lakes, oceans and rain, and is the major constituent of the fluids of organisms.

Water on Earth moves continually through the water cycle of evaporation and transpiration (evapotranspiration), condensation, precipitation, and runoff, usually reaching the sea. Evaporation and transpiration contribute to the precipitation over land. Water used in the production of a good or service is known as virtual water.

Safe drinking water is essential to humans and other lifeforms even though it provides no calories or organic nutrients.

Uses of water include agricultural, industrial, household, recreational and environmental activities. The majority of human uses require fresh water. Drinking water, also known as potable water or improved drinking water, is water safe enough for drinking and food preparation.

Water pollution is the contamination of water bodies (e.g. lakes, rivers, oceans, aquifers and groundwater). This form of environmental degradation occurs when pollutants are directly or indirectly discharged into water bodies without adequate treatment to remove harmful compounds.

Sewage is a water-carried waste, in solution or suspension, that is intended to be removed from a community. Also known as domestic or municipal wastewater.

Human excreta have been implicated in the transmission of many infectious diseases including cholera, typhoid, infectious hepatitis, polio, cryptosporidiosis, and ascariasis. Undernutrition, pneumonia, worm infestations, are also associated with unsafe water, poor sanitation and hygiene resulting in reduced physical growth, weakened physical fitness and impaired cognitive function, particularly for children under the age of five.

The sewage water is often drained off into rivers without treatment. The careless disposal of sewage water leads to a chain of problems. However, if this water is treated in the right manner it can also be used for productive purposes in the field of agriculture, energy generation etc.

Sanitation

Sanitation refers to hygiene. Sanitation generally refers to the provision of facilities for the safe disposal of human urine and faeces.

- The main objective of human health is to protect and provide clean environment.
- Sanitation is a major problem in developing countries such as India and China.
- Due to explosion in population, government is unable to provide proper sanitation through underground drainage system.

Effects of poor sanitation

Water and soil are polluted by open defecation.

Contaminated water and soil prove to be breeding grounds for microorganisms.

Poor sanitation contaminates the ground water which further causes diseases like cholera, typhoid, polio, meningitis, hepatitis and dysentery.

Foul smell from open drains causes inconvenience and respiratory disorders in human beings.

Sewage disposal systems

On-site sewage disposal systems are the systems which collect human excreta and store it in a hole or a pipe and later directed into a sewage treatment plant.

Other methods for sewage disposal are septic tanks, chemical toilets, composting pits and vermi-composting toilets. These on-site sewage disposal systems are cost-effective.

a) Septic tanks

Septic tank is a water tight chamber made of brick, concrete or glass. Solid particles settle down at the bottom and are degraded anaerobically. Effluent escapes through sewers and should be allowed to soak or evaporate.

b) Chemical toilets

Aeroplanes and trains usually have chemical toilets. A chemical toilet uses chemicals to disinfect human waste and remove its bad odour.

c) Composting toilets

A composting toilet is a system that converts human waste into organic compost and usable soil. This happens when micro-organisms such as bacteria and fungi, and macro-organisms such as earthworms oxidise organic waste to break it down into essential minerals.

d) Vermi-Composting toilets

A vermi-composting toilet is a process that involves earthworms which treat human excreta. The entire human waste is converted into vermi-compost.