

# HANDOUT2/3

Class - IX

Subject - Science

## Chapter 14 – Natural Resources

### Water: A wonder liquid

A very large area of the earth's surface is covered with water. Water is also found inside the earth, in the atmosphere as water vapour.

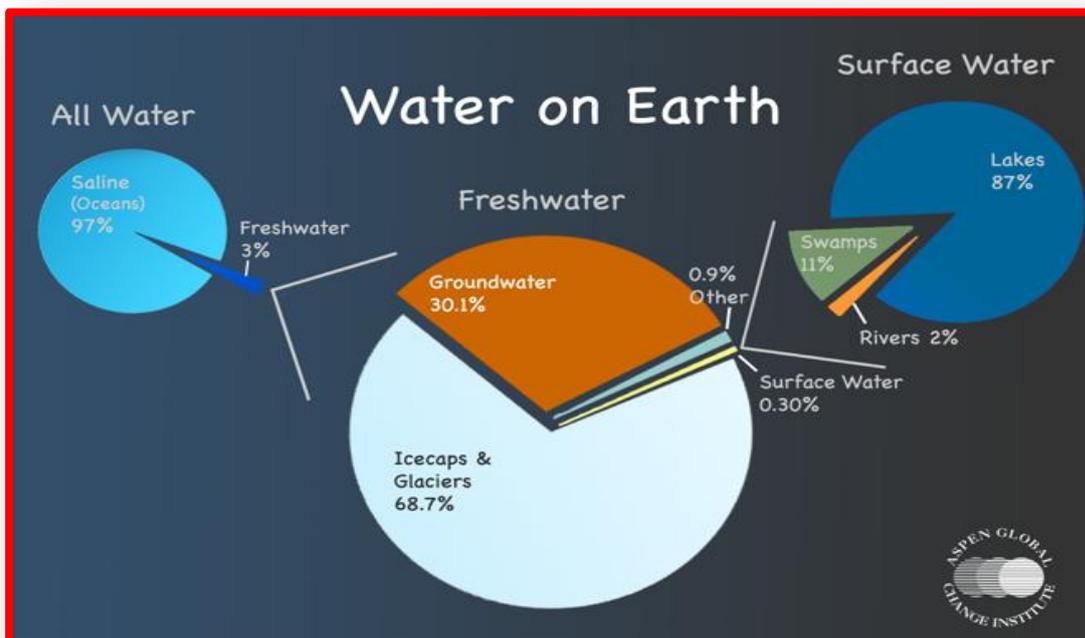
The water in seas and oceans is saline.

Fresh water is found in rivers, lakes, ponds and as ice and snow at the poles and mountains in cold regions.

Terrestrial life-forms require fresh water for this because their bodies cannot tolerate or get rid of the high amounts of dissolved salts in saline water.

Water is needed by living organisms because all life processes and cellular activities need water. So, all organisms need water to survive.

The amount of water and other factors like temperature and nature of soil decides the diversity of species and the number of individuals of each species in an area.



## **Water Pollution**

It is contamination of water with unwanted and harmful substances in water adversely affect on living organism is called water pollution.

### **Water-Pollution cover the following effects:**

1. The addition of undesirable substances to water-bodies.
2. The removal of desirable substances from water-bodies.
3. A change in temperature.

#### **1. The addition of undesirable substances to water-bodies.**

These substances could be the fertilisers and pesticides used in farming or they could be poisonous substances, like mercury salts which are used by paper-industries. These could also be disease-causing organisms, like the bacteria which cause cholera.

#### **2. The removal of desirable substances from water-bodies.**

Dissolved oxygen is used by the animals and plants that live in water. Any change that reduces the amount of this dissolved oxygen would adversely affect these aquatic organisms. Other nutrients could also be depleted from the water bodies.

#### **3. A change in temperature.**

Aquatic organisms are used to a certain range of temperature in the water-body where they live, and a sudden marked change in this temperature would be dangerous for them or affect their breeding. The eggs and larvae of various animals are particularly susceptible to temperature changes.

## **PREVENTION OF WATER POLLUTION**

The best way to prevent large-scale water pollution is to try and reduce its harmful effects. There are various small changes we can make to protect ourselves from a scary future where water is scarce.

1. **Save Water:** Conserving water is our first aim. Water wastage is a major problem globally and we are only now waking up to the issue. Simply small changes you can make domestically will make a huge difference.
2. **Better treatment of sewage:** So treating waste products before disposing of it in a water body helps reduce water pollution on a large scale.

Agriculture or other industries can reuse this wastewater by reducing its toxic contents.

3. **Use environmentally friendly products:** By using soluble products that do not go on to become pollutants, we can reduce the amount of water pollution caused by a household.

## **Soil -**

The outermost layer of our Earth is called the crust and the minerals found in this layer supply a variety of nutrients to life-forms.

But these minerals will not be available to the organisms if the minerals are bound up in huge rocks.

Over long periods of time, thousands and millions of years, the rocks at or near the surface of the Earth are broken down by various physical, chemical and some biological processes. The end product of this breaking down is the fine particles of soil.

## **Formation of soil-**

The formation of soil takes place in the following ways:

- (i) Rocks near the surface of Earth are broken down by various physical, chemical and some biological processes. This process takes millions of years.
- (ii) This weathering leads to the formation of fine particles called soil.
- (iii) **Some other factors** also lead to the formation of soil. These are:
  - (a) Sun causes heating of rocks that causes cracking and breaks down them into small particles.
  - (b) Water dissolve rocks by freezing and fast flowing.
  - (c) Wind causes erosion of rocks by fast blowing.
  - (d) Liches and mosses grow on rock surfaces and break them into powder down and form a thin layer of soil. The big trees sometimes enter into cracks in the rocks and force them to break further during their growth.

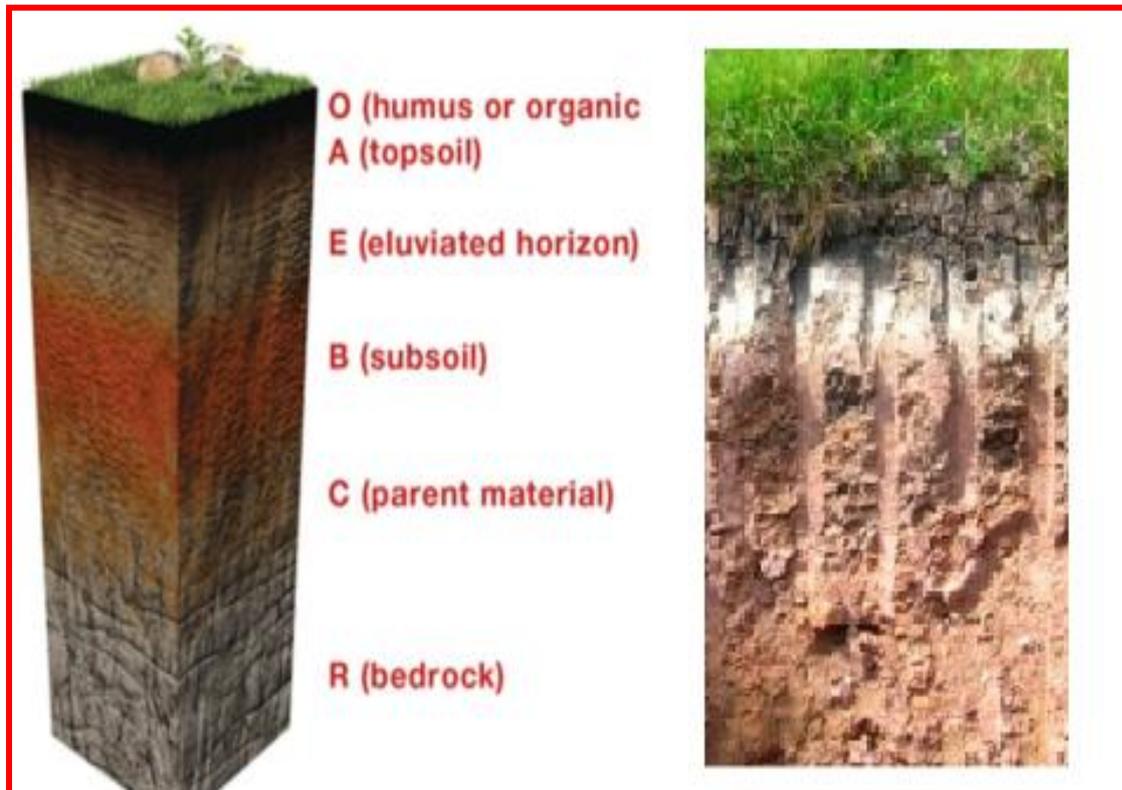
### Living organisms depend on soil in the following ways:

- (i) It provides natural **habitat** for various living organisms, e.g., bacteria, fungi, algae, earthworms, etc. These help to maintain the fertility of soil.
- (ii) Earthworm performs all its activities in the soil. It maintains the **fertility** of soil by releasing nitrogen rich excreta.
- (iii) Many animals like rats, rabbits, etc., make their home in the soil.
- (iv) Soil helps to bind the roots of plants to provide them anchorage. The nutrients in soil are absorbed by the plants for their growth and development.

*The **type** of soil is decided by the average **size** of particles found in it and the **quality** of the soil is decided by the amount of **humus** and the **microscopic organisms** found in it.*

### Composition of soil

Soil is a mixture of rock particles, decayed organisms called humus, living organisms, minerals, air and water. The amount of minerals, humus, air and water are the factors which decides the biodiversity in that area.



## Soil Pollution

- 1) The addition of harmful substances and removal of useful components from the soil which affects the fertility of the soil and kills the diversity of organisms living in it is called soil pollution.
- 2) Soil pollution is caused by the excessive use of fertilisers and pesticides. It kills the organisms like earthworms and bacteria which makes the soil rich in humus.
- 3) The removal of useful components and addition of other harmful substances reduces the fertility of soil and causes soil pollution.

### Soil erosion

The carrying away of soil from one place to the other by flowing water and wind is called soil erosion. Large scale deforestation also causes soil erosion.

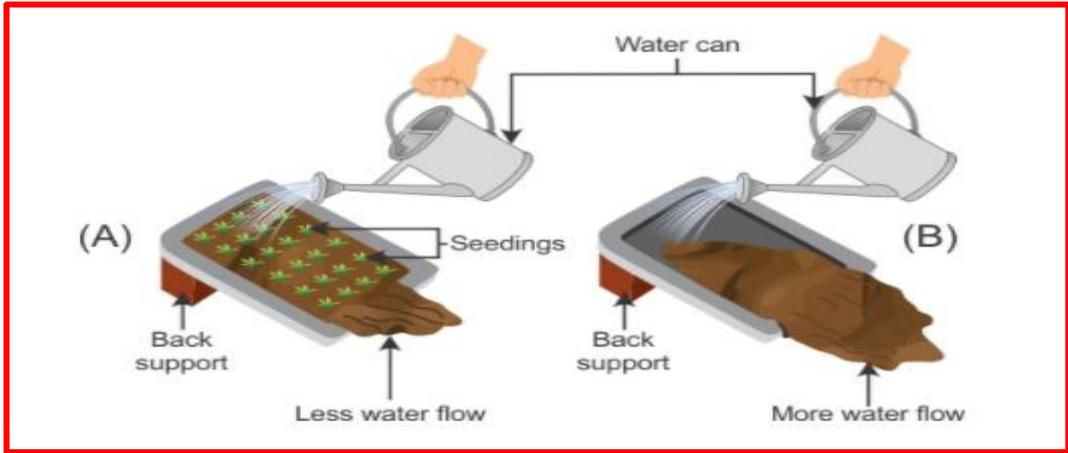
#### ***Soil erosion can be reduced or prevented by-***

- (i) **Afforestation** -Planting more trees reduces soil erosion.
- (ii) **Contour Ploughing**- Ploughing land in furrows across the natural slope of the land helps trap water and prevent the washing away of top soil along with it.
- (iii) **Step (terrace) Farming** -Farmers form a series of steps by making horizontal strips supported by walls to catch the descending water. It gives the water sufficient time to percolate into the soil and nourish the crop.
- (iv) **Soil Cover** -After harvesting a crop, soil is covered with dried vegetation to prevent its erosion.
- (v) **Stop Overgrazing**- Grasses tend to bind soil particles to prevent their erosion. If overgrazing is allowed, the grasses are uprooted and soil gets eroded.

### Activity - **Effect of flowing water on top soil.**

- 1) Take two trays A and B of the same size and fill them with soil.
- 2) Plant mustard or green gram in one of the trays.
- 3) Water both the trays for a few days till the first tray is covered by plant growth.
- 4) Tilt both the trays at the same angle.
- 5) Pour equal amount of water gently on both the trays.
- 6) More soil is carried out of the tray B which did not have plant growth.

***This shows that vegetative cover reduces soil erosion.***



**Thank  
You!!!**