



Water is a natural resource that is vital to the presence of life on Earth. Water exists in abundance on our planet Earth. However, only a very small fraction of it is fit for human consumption.

Most of the water that exists on Earth is in the seas and oceans. Sea and ocean water are highly salty and hence unfit for drinking. Most of the fresh water is frozen in the glaciers in the polar ice caps, and is thus not readily available.

Forms of Water: Water exists in three states, i.e., solid, liquid, and gas. All the three states are reversible or Interchangeable. All the three states of water are also present in our natural environment at any given time.

Solid: Glaciers, icebergs, snow, hail, frost, and ice crystals in the clouds are solid forms of water.

Liquid: Rain, dew, and clouds are water droplets or liquid forms of water. Liquid water also covers three-quarters of the surface of the Earth in the form of lakes, rivers, and oceans.

Gaseous Water vapour, fog, steam, and clouds are gaseous forms of water. Water exists in all the three states because water can change its state very easily in a range of temperatures, i.e., between 0°C (ice) and 100°C (vapour). This change also takes place on its own in our environment forming a cycle which we know as the water cycle.

Water Cycle: The continuous circulation of water in nature is called the water cycle. It is also called the hydrological cycle.

Condensation: Water Vapour condenses into millions of tiny droplets that form clouds in the sky.

Precipitation: The million of tiny droplets collide with one another to form larger droplets which fall down as rain or snow when they become too heavy.

Evaporation: Water from Oceans lakes and river evaporate under the heat of the sun.

Uses and Importance of Water: The uses of water can be broadly divided into agricultural, domestic, and industrial uses. The major portion of water in India is used in agriculture, as India is mainly an agricultural country.

1. Agricultural: Nearly 60% of the Indian population depends on agriculture for their living. and uses nearly 90% of all water for irrigation. Irrigation systems are necessary because the monsoons are unpredictable and in regions where cultivation completely depends on the rain, no rain can result in reduced yields or even total crop failure.

2. Domestic: Water required for household use is called domestic water. It is required for a variety of purposes such as drinking, preparing food, bathing, washing clothes and dishes watering plants, etc We generally get water in our homes in one of the following two ways It is either delivered by the municipal water distribution system, or we extract it from an underground source through a motor-driven tube well. In cities, municipal water treatment plants supply homes with treated water that matches drinking water standards. In rural areas, however, over 80% of the domestic water comes from underground sources.

3. Industrial: Industry depends on water at all levels of production. It is used as a raw material, a solvent, a coolant, a transport agent, and for generating electricity. Due to industrial development, the demand for water in this area has increased in the past years.

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Sources of Water: Precipitation in the form of rain or snow provides fresh water to our planet Earth. Most of the fresh water returns to the oceans through rivers flowing across the globe. A small portion of it is absorbed by the soil and is stored underground. A still smaller portion is stored in natural (lakes and ponds) and man-made (tanks and reservoirs) water bodies. Thus, the various sources of water can be divided into two main categories:

- Surface water
- Underground water or subsoil water

Surface Water: Water present on the surface of the Earth is called surface water. It can further be classified into three categories depending upon the 'purity of water.'

1. **Rainwater:** Rainwater is the purest form of water. As water from the seas and rivers evaporate to form water vapour under the heat of the sun, it leaves behind all the impurities. When precipitation occurs, the first showers dissolve certain gases present in air and also bring suspended impurities along with it. Subsequent showers, however, consist of pure water.

2. **River and Lake Water:** The water in these water bodies comes either from rainfall or melting of snow (glaciers) on the mountains.

3. **Sea and Ocean Water:** Oceans are a huge store of water. Millions of liters of water is present in them. But the water is salty and is not fit for either domestic or agricultural use.

Underground Water or Subsoil Water: Groundwater is the water under the ground where the soil is completely filled or saturated with water. Rainwater seeps through topsoil and layers of rocks like limestone, sand and gravel, and gets collected on top of non-porous layers. The top level of this underground water is called the water table. Underground water is also known as an aquifer. The place where the water table meets the land surface, water may come out of the surface the form of a natural spring and flow into a lake, stream or an ocean. Groundwater that meets the land surface also keeps rivers, streams, and lakes filled with water. Wells can also be drilled to take out the underground water.

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