

Evaporation

The process of a liquid changing into vapour (or gas) even its boiling point is called evaporation.

- The wet clothes dry due to evaporation of water present in them. Common salt is also recovered from sea-water by the process of evaporation.
- **The process of evaporation can be explained as follows:** Some particles in liquid always have more kinetic energy than the others. So, even when a liquid is well below its boiling point, some of its particles have enough energy to break the forces of attraction between the particles and escape from the surface of the liquid in the form of vapour (or gas). Thus the fast moving particles (or molecules) of a liquid are constantly escaping from the liquid to form vapor (or gas).

Factors affecting Evaporation:

The evaporation of a liquid depends mainly on the following factors:

- Temperature
 - Surface area
 - Humidity
 - Wind speed
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- **Temperature:** The rate of evaporation increases on increasing the temperature of the liquid.
 - **Surface area of the liquid:** The rate of evaporation increases on increasing the surface area of the liquid. For e.g. If the same liquid is kept in a test tube and in a china dish, then the liquid kept in the china dish evaporate more rapidly.
 - **Humidity of Air:** The amount of water present in air is represented by a term called humidity. When the humidity of air is low, then the rate of evaporation is high, and water evaporates more readily.
 - **Wind Speed:** The rate of evaporation of a liquid increases with increasing wind speed.

Cooling caused by evaporation:

- The cooling caused by evaporation is based on the fact that when a liquid evaporates, it draws or takes the latent heat of vaporization from 'anything' which it touches. By losing heat, this 'anything' gets cooled.
- During hot summer days, water is usually kept in an earthen pot (called pitcher or matka) to keep it cool. The earthen pot has large number of extremely small pores (or holes) in its walls. Some of the water continuously keeps seeping through these pores to the outside of the pot. This water evaporates (changes into vapor) continuously and takes the latent heat required for vaporization from the earthen pot and the remaining water. In this way, the remaining water loses heat and gets cooled.
- Perspiration (or sweating) is our body's method of maintaining a constant temperature.
- We should wear cotton clothes in hot summer days to keep cool and comfortable.

To Show the Presence of Water Vapor in Air

- There is always some water vapor in the air around us. Water vapor comes into the air from the evaporation of water present in ponds, lakes, rivers and oceans.
- Water vapor is also given out by plants by the process of transpiration. Animals give out water vapor when they breathe out air. All this water vapor goes into the air around us.
- The presence of water vapor in air can be shown by the following experiment:
- Let us take some ice -cold water in a tumbler. Soon we will see water droplets on the outer surface of tumbler. The water vapor present in air, on coming in contact with the cold glass of water, loses energy and gets converted to liquid state, which we see as water droplets.

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