

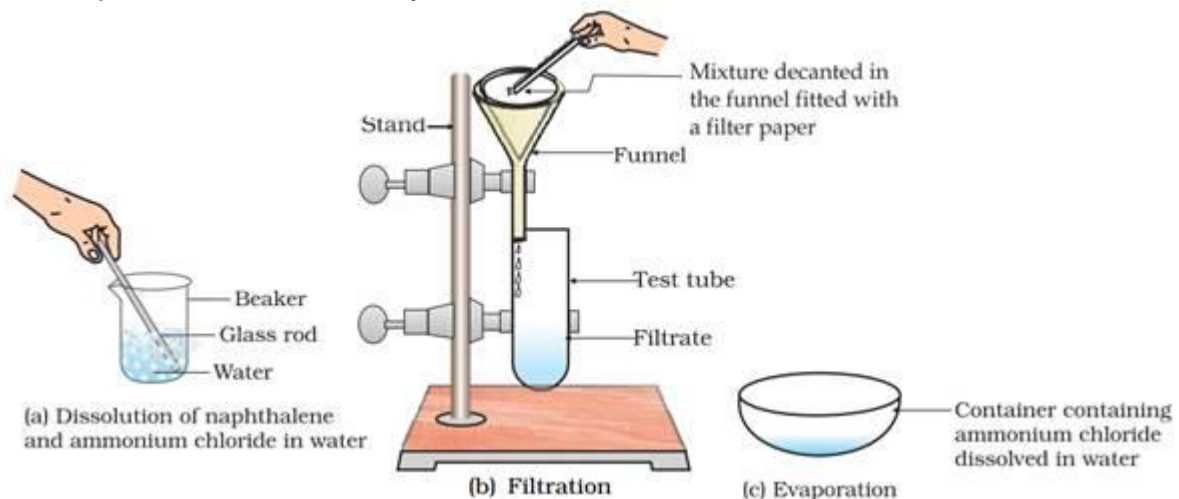
## Long Answer Questions

### Chapter - 1 Matter in our Surrounding

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1. You are provided with a mixture of naphthalene and ammonium chloride by your teacher. Suggest an activity to separate them with a well-labelled diagram.

**Ans:** Naphthalene is insoluble in water but soluble in ether (an organic solvent) whereas ammonium chloride is soluble in water. Naphthalene is volatile at room temperature whereas ammonium chloride is volatile at a higher temperature. Their mixture can be separated through decantation of their aqueous mixture. Naphthalene remains insoluble in water and can be collected in a funnel. The filtrate of ammonium chloride can be evaporated to obtain dry ammonium chloride.



2. It is a hot summer day, Priyanshi and Ali are wearing cotton and nylon clothes respectively. Who do you think would be more comfortable and why?

**Ans:** Cotton is a soft fibre whereas nylon is a synthetic polymer. Cotton absorbs water (moisture) better as compared to nylon. Therefore, cotton helps in a faster absorption of sweat followed by evaporation. Evaporation of sweat from a cotton shirt, particularly during a windy weather, leads to a cooling effect. So, Priyanshi would be more comfortable in a cotton shirt, whereas Ali (wearing a nylon shirt) would not be that comfortable.

**3. You want to wear your favourite shirt to a party, but the problem is that it is still wet after a wash. What steps would you take to dry it faster?**

**Ans:** Conditions that can increase the rate of evaporation of water from the shirt are as follows:-

**(a) Increase the surface area of the shirt exposed to the atmosphere –** Evaporation is a surface phenomenon. The surface area of the shirt can be increased by spreading the shirt on a cloth hangline (preferably after spinning the shirt in the dryer of a washing machine).

**(b) Increase in temperature** - This can be achieved by putting the shirt in direct sunlight. Ironing the shirt when it is sufficiently damp will also facilitate in drying it faster.

**(c) Reduction in humidity** - This can be achieved by increasing the wind speed e.g. spreading the shirt under a moving fan.

**(d) Use of an automated cloth hangline** - An automated cloth hangline uses humidity sensors to automate the hangline. The hangline automatically moves from shade to sunlight whenever humidity sensors sense high humidity in the air.

**4. Comment on the following statements:-**

**(a)** Evaporation produces cooling.

**Ans:** Evaporation is a surface phenomenon. Liquid particles present on the surface of a liquid absorb heat from the surroundings and gain energy. These liquid particles with higher energy overcome the inter-molecular forces and change into vapours thereby producing a cooling effect. Thus, evaporation produces cooling.

**(b)** Rate of evaporation of an aqueous solution decreases with increase in humidity.

**Ans:** At a given temperature, air surrounding us cannot hold more than a definite amount of water vapour. This is known as humidity. If the surrounding air has high water vapour content, the air will not take up more water vapours. Therefore, the rate of evaporation decreases with increase in humidity.

**(c) Sponge though compressible is a solid.**

**Ans:** Though sponge is a solid but the material of the sponge is not rigid like other solids. A piece of sponge has minute holes inside it. These holes trap the air. When sponge is pressed, the trapped air is expelled out. Thus, sponge is compressible.

**5. Why does the temperature of a substance remain constant during its melting point or boiling point?**

**Ans:** The temperature of a substance remains constant at its melting and boiling points until all the substance melts or boils. The heat supplied is continuously used up in overcoming the forces of attraction between the particles of the substance during the transition of physical state of the substance. This is known as the latent heat of fusion or the latent heat of vaporization, as the case may be. Thus, heat energy is absorbed by the substance without showing any rise in temperature.