BAL BHARATI PUBLIC SCHOOL, PITAMPURA, DELHI – 110034

Class- 9

Chemistry

Ch-1: Matter in Our Surroundings

Guidelines

Dear Students

- Refer to the content given below and view the links.
- These notes will help you to understand the concept and complete the assignment that follows.
- The assignment is to be done in the Chemistry notebook
- Please read Science NCERT book before you begin answering the questions.
- Link for Class 9 Science NCERT book:

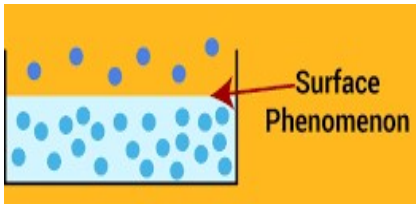
http://ncertbooks.prashanthellina.com/class_9.Science.Science/CHAP%201.pdf

Sub-Topics

1. Evaporation
2. Evaporation causes cooling
3. Factors affecting evaporation
4. Applications of evaporation in daily life
5. Difference between evaporation and boiling

1. Evaporation

- Evaporation is defined as a process of change of liquid state into its vapour at all the temperatures below its boiling point.
- Evaporation is said to be a surface phenomenon as the particles present on the surface which have energy greater than the average kinetic energy of the particles are able to break the forces of attraction and escape from the surface of the liquid in the form of vapour.



2. Evaporation causes cooling

During evaporation process the particles of liquid gain energy from their surroundings in order to overcome the force of attraction between them. This causes loss of heat energy from the surroundings, that is why evaporation causes cooling.

3. Factors affecting evaporation

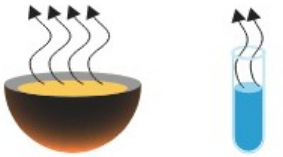
The evaporation of a liquid depends mainly on the following factors:

a) Temperature

The rate of evaporation increases on increasing the temperature of the liquid. This is because with the increase in temperature, a greater number of particles get enough kinetic energy to change into the vapour state.

b) Surface area of the liquid

The rate of evaporation increases on increasing the surface area of the liquid. Since evaporation is a surface phenomenon, so, if the surface area is more , more will be the number of particles present at the surface which can change into the vapour state.



More the surface area, more will be the rate of evaporation

c) Humidity of Air

The amount of water vapour present in air is called humidity. We know, air can hold a fixed amount of humidity. Hence, when the humidity of air is low, then the rate of evaporation is high, and water evaporates more readily.

d) Wind Speed

The rate of evaporation of a liquid increases with increasing the wind speed. This happens because, with an increase in wind speed, water particles are taken away with the wind which results in decrease in the amount of water vapour in the atmosphere.

4. Applications of evaporation in daily life

- **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

small pores (or holes) in its walls. Some of the water continuously keeps seeping through these pores. This water evaporates by taking heat from the surroundings. Since evaporation causes cooling, the remaining water gets cooled.

- **During summers, people sprinkle water on the roof.** As water evaporates, it takes heat from the surface which causes cooling effect.

- **A desert cooler works better on a hot and a dry day.** The humidity, that is the amount of water vapour in air is less on a hot dry day. Lesser the humidity more is the rate of evaporation and more is the cooling effect.

- **When some acetone, petrol, or perfume is dropped on the palm, then it feels cool.** This happens because it takes heat from the palm and evaporates, thereby making the palm cooler.

- **We should wear cotton clothes in summers**. Cotton is a good absorber of water. It absorbs sweat and exposes it for easy evaporation. As a result, body feels cool and comfortable. Also, cotton clothes have large number of tiny pores through which air can pass and keep us comfortable in summers.

- **While putting clothes for drying up, we spread them.** This is done to increase the surface area, which increases the rate of evaporation.

5. Difference between evaporation and boiling

EVAPORATION	BOILING
Evaporation is the process of conversion of a liquid into vapours at any temperature below its boiling point.	Boiling is the process by which a liquid turns into its vapour when it is heated to its boiling point.
It is a surface phenomenon.	It is a bulk phenomenon.
Evaporation causes cooling.	Boiling doesn't cause cooling.
Evaporation is a slow process.	Boiling is a fast process.

Assignment Questions (To be done in the fair noebook)

1. Differentiate between evaporation and boiling.
2. Give reasons for the following statements:

a) A desert cooler works better on a hot and dry day.
b) Water is kept in earthen pots during summers.

c) The rate of evaporation increases on increasing the surface area.

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