



Edu Junior

Where Passion Meets Educations



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Class 6th

Chapter- 3rd

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SEPARATION

OF

SUBSTANCES

A mixture is made up of two (or more) pure substances.

The pure substances which are present in a mixture are called components of the mixture.

The components of a mixture retain their original properties.

So, a mixture shows the properties of all the substances present in it.

A mixture can be a solid, liquid or gas. For example, soil is a solid mixture, milk is a liquid mixture whereas air is a gaseous mixture.

Reasons for Separating Mixtures into Their Components

The mixtures are separated into their components for various purposes, such as:

- (i) to remove an undesirable component,**
- (ii) to remove a harmful component,**
- (iii) to obtain the pure sample of a substance,**
- (iv) to obtain a useful component.**

METHODS OF SEPARATION OF MIXTURES

Some of the methods which are commonly used for separating the components of mixtures are:

Threshing.

Winnowing

Hand-picking

Sieving

Magnetic separation

Decantation

Loading

Filtration

Evaporation

Distillation

1. THRESHING

Threshing is the process in which stalk are beaten to separate grains from the stalks, and from the chaff that covers the grains.

Threshing is done by holding the bundles of stalks in hands and hitting them on a hard surface. In this way, the grains separate from the stalks.

Threshing is also done with the help of cattle such as bullocks, etc. In this method, the harvested and dried crop plants (or stalks) are spread on the ground in a small area, and various cattle such as bullocks, buffaloes and camels, etc, are made to walk over them in circles, again and again, for a considerable time. The cattle's feet crush (or beat) the stalks due to which the grains get separated from stalks. This crushing also breaks the chaff around the grains and hence the grains get separated from chaff.

Threshing, the stalks are converted into very small pieces called 'hay' which is used as a dry fodder for cattle.

2. WINNOWING

Winnowing is the method of separating husk from grains with the help of wind.

This method is based on the fact that husk is very light whereas grains are comparatively heavy.

Winnowing is done by using a winnowing basket.

3.HAND-PICKING

The method of hand-picking is usually used to separate undesirable substances such as small pieces of stones from wheat, rice and pulses.

The food grains containing small pieces of stones are taken in a flat container. The pieces of stone are picked up from the grains by hand. Ultimately, all the stone pieces are removed and only food grains are left behind.

4. SIEVING

The method of separating a mixture by using a sieve is called sieving. Sieving is used to separate those solid mixtures which have components of different sizes.

The mixture having components of different sizes is put in a sieve and the sieve is moved back and forth continuously. The smaller particles of the mixture pass through the holes of the sieve and collect in a vessel kept below.

The bigger particles of the mixture cannot pass through the small holes of the sieve and remain behind in the sieve.

5. DECANTATION

The solid particles which are insoluble in a liquid can be separated by decantation.

Example

The sand and water mixture is taken in a beaker. It contains sand particles scattered throughout water. Allow the mixture of sand and water to stand undisturbed for some time.

On keeping, the heavier sand particles will settle down at the bottom of the beaker. This layer of sand is called sediment. The deposition of sand at the bottom of beaker is called sedimentation.

When the sand settles down, clear water is left above the layer of sand pour the clear water into another beaker gently with the help of a glass rod, without disturbing the sediment of sand. This process is called decantation.

6. FILTRATION

The process of removing insoluble solids from a liquid by using a filter paper is known as filtration. Filtration is used for separating insoluble substances from a liquid.

Example

The mixture of insoluble solid and the liquid is poured into a filter paper cone fixed in a funnel by using a glass rod.

The liquid passes through the filter paper and collects in the beaker kept below the funnel.

The solid particles do not pass through the filter paper and remain behind on the filter paper.

The clear liquid obtained is called filtrate.

7. EVAPORATION

The changing of a liquid into vapours (or gas) is called evaporation.

Evaporation is used to obtain a solid substance that has dissolved in water.

The dissolved substance is left as a solid residue when all the water has evaporated.

Though evaporation of a liquid can take place even at room temperature but it is very slow at room temperature.

SATURATED SOLUTIONS

A solution in which no more substance can be dissolved at that temperature, is called a saturated solution. For example, if in a given salt solution, no more salt can be dissolved at that temperature, then that salt solution will be a saturated solution. Thus, a saturated solution contains the maximum amount of substance which can be dissolved in it at that temperature.

Solubility

The maximum amount of a substance which can be dissolved in 100 grams of water at a given temperature, is known as the solubility of that substance in water (at that temperature).