

towards a magnet and hence can be separated by this method.

Example : Mixtures of iron and sulphur, iron and sand, etc., can be separated by moving a magnet over them. Iron gets attached to the magnet and is separated.

Gravitational method : This method is used only when one of the components is much heavier than water and the other component is much lighter than water.

Example : If a mixture of sand and saw-dust is put in water, saw dust being lighter floats while sand settles down. Now saw-dust with water is slowly decanted and transferred to another container and then filtered to separate the saw-dust.

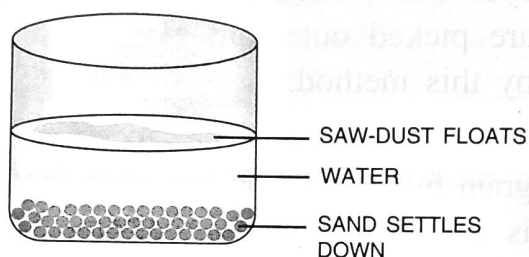
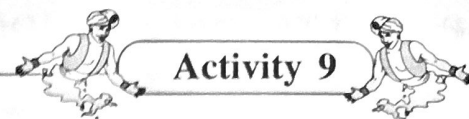


Fig. 3.3

Sublimation : The process in which a solid changes directly into its vapours on heating is called *sublimation*. This method is used for solid mixtures in which one of the components can *sublime* on heating. The solid which sublimates escapes as vapours, while the other one is left behind.

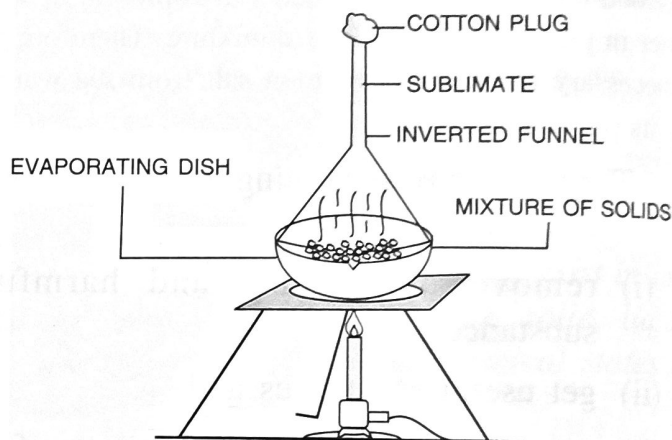
Example : Mixture of sand and iodine, common salt and ammonium chloride, etc. are separated by sublimation.

On cooling, the vapour again turns into a solid. Camphor, naphthalene, iodine, and ammonium chloride undergo sublimation.



To separate common salt and ammonium chloride

Take a mixture of common salt and ammonium chloride and place it in a dish and cover with an inverted funnel. and heat it. On heating, ammonium chloride changes into vapour, which condenses into a solid in the neck of the funnel (from where it may be scraped off), whereas common salt is left behind in the dish.



Sublimation : Separating a mixture of common salt and ammonium chloride

Solvent Extraction Method : This method is used when one of the solid components is soluble in a liquid.

Example : A mixture of sand and salt can be separated by this method. Salt gets dissolved in water while sand settles down in the container. The salt solution is then filtered. Salt is separated from the solution by evaporation. In this way, they can be separated.

(B) Separation of solid-liquid mixtures

These mixtures can be homogeneous (a sugar solution) or heterogeneous (a mixture

of sand and water). Different methods are used depending upon the type of mixture.

Sedimentation and decantation : The settling down of suspended, insoluble, heavy solid particles in a solid-liquid mixture when left undisturbed is called **sedimentation**.

The solid which settles at the bottom is called **sediment** while the clear liquid above it is called **supernatant liquid**.

The process of pouring out the clear liquid, without disturbing the **sediment**, is called **decantation**.

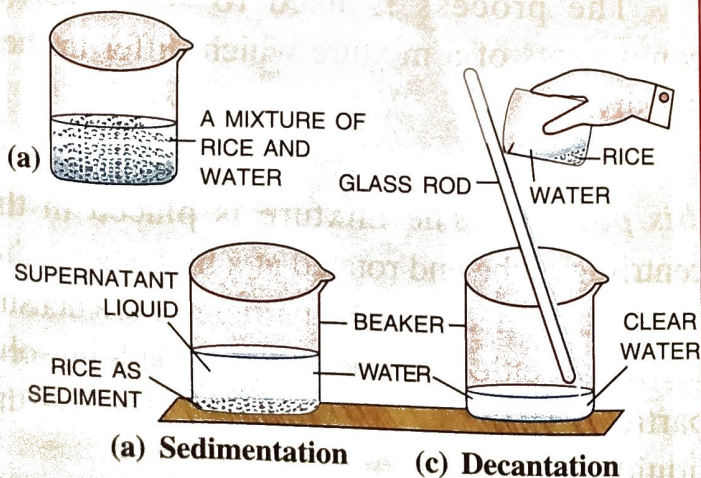
This method is used for a heterogeneous mixture of solid and liquid where the solid component is insoluble and heavier than the liquid component.

Example : A mixture of sand and water, rice and water, etc.



Activity 10

Take some rice and water in a beaker and stir it. Now allow the mixture to stand for some time. You will see that the rice settles at the bottom of the beaker. This is called **sedimentation**. Now pour out water gently into another vessel without disturbing the rice. This is called **decantation**.



Filtration : The process of separating insoluble solid particles from a liquid by allowing it to pass through a filter is called **filtration**.

This process is used for separating the components of a heterogeneous solid-liquid mixture in which solids are insoluble in liquids.

The substances that can be used as filters are a layer of sand, charcoal, cotton, glass wool, unglazed porcelain, filter paper, etc. Even the strainer that we use to separate liquid tea from tea leaves is a filter.

These filters allow liquids to pass through them but not solids. The insoluble solid left on the filter is called the **residue**, while the liquid which passes through the filter is called the **filtrate**.

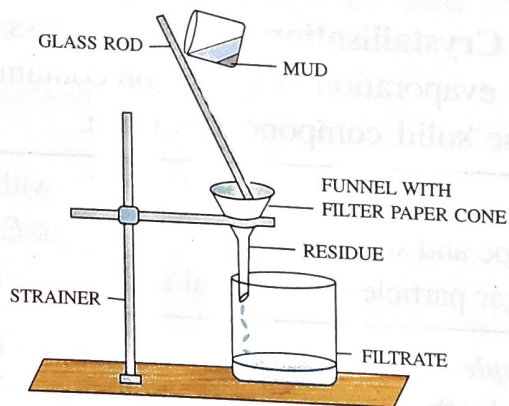


Fig. 3.4 Process of filtration to separate insoluble suspension from water (on small scale)

Example : Mixtures like chalk and water, clay and water, tea and tea leaves, sawdust and water, etc., are separated by this method.

Evaporation : Evaporation is the process of converting a liquid into its vapour state, either by exposing it to air or by heating.

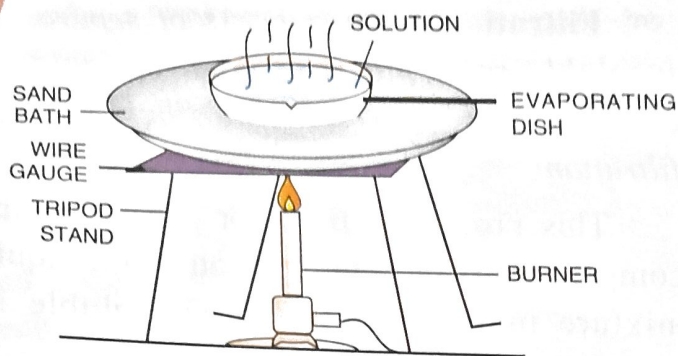


Fig. 3.5 Evaporation

This method is used to separate the components of a homogeneous solid-liquid mixture, like salt from sea water. Sea water is collected in shallow beds and allowed to evaporate in the sun. When all the water is evaporated, salt is left behind. By this method, we get only the solid, whereas the liquid escapes in the form of vapours. For separating a solid from its solution, we usually evaporate it until whole of the liquid escapes in its vapour form.

Crystallisation : It is a process in which slow evaporation of a solution containing more of the solid component is done.

Note : Crystals are the solid particles with definite shape and size. They are lustrous too. *Example :* Sugar particles are cubical and they shine.

Example : Pure sugar is obtained from its solution in water by the process of crystallisation.

At first the sugar solution is heated to evaporate water at a faster speed. When very less of water is left, the solution is cooled. On cooling sugar dissolved in it starts separating out in the form of **crystals**.

Distillation : Distillation is the method of getting a pure liquid from a solution by evaporating and then condensing the vapours.

When the solution is heated, the liquid component of the mixture evaporates in the form of vapours. These vapours are then condensed back into the liquid form which is very pure and is called as **distillate**.

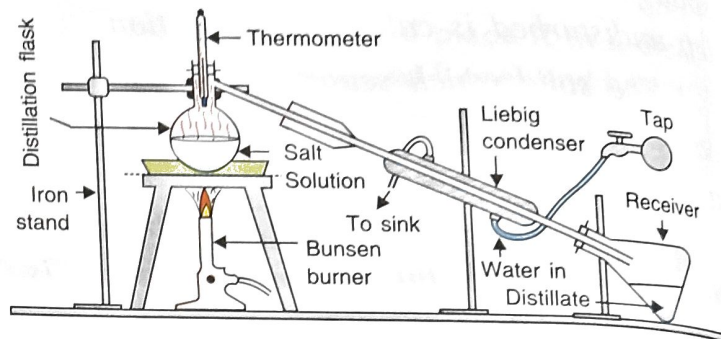


Fig. 3.6 Distillation

Tap water, which is a mixture containing dissolved salts, is purified by *distillation*. The pure water so obtained is called *distilled water*. It is used by doctors for preparing medicines, by chemists for making solutions and in industries for various purposes.

The advantage of this process is that both the components of the solid-liquid mixture are obtained.

Centrifugation : Centrifugation is the method of separating solids from liquids where the mixture is homogeneous. This is also called *churning*.

The process is used to separate the components of a mixture which differ in their density.

An apparatus called centrifuge is used for this purpose. The mixture is placed in the centrifuge tube and rotated at a high speed, due to which the heavier solid particles (high density particles) settle at the bottom and the light solid particles (low density particles) float on the liquid.

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2020 AUGUST

DAY 238 - 128 WEEK 35

TUESDAY

08	August 2020						
Wk	M	T	W	T	F	S	S
31/26	31					1	2
32	3	4	5	6	7	8	9
33	10	11	12	13	14	15	16
34	17	18	19	20	21	22	23
35	24	25	26	27	28	29	30

APPOINTMENT / MEETING

Class - VII

Chap-3 Element, Compound and mixture

Part-4

Date - 19.6.20 Subject - Chemistry

① Give one eg. of solvent extraction method and explain it.

② What do you understand by sedimentation and decantation?

③ What is sediment and supernatant liquid? Explain with an eg.

④ What is Filtration?

⑤ What is filtrate and residue?

⑥ Give one eg. of filtration and explain it.

⑦ What is Evaporation?

⑧ How can you separate salt from sea water by the process of evaporation?

NOTES

36		1	2	3	4	5	6
37	7	8	9	10	11	12	13
38	14	15	16	17	18	19	20
39	21	22	23	24	25	26	27
40	28	29	30				

AUGUST 2020

DAY 239-127 WEEK 35

WEDNESDAY

26

APPOINTMENT / MEETING

- 8 (9) What is Crystallization?
- 9 (10) What are Crystals? Give eg.
- 10 (11) How can you obtain sugar crystals from sugar solution by the process of Crystallization?
- 11 (12) What is distillation?
- 12 (13) What is distillate?
- 1 (14) What is Distilled water?
- 2 (15) Give the use of distilled water
- 3
- 4
- 5
- 6

P. Sal
11.6.20