Separating mixtures and materials

Key Vocabulary

Contamination—when something cleans gets mixed with something dirty, making it unclean or unsade

Dissolve—a solid breaks down and combines with a liquid forming a solution

Filter—to use a special tool or process to separate materials

Insoluble—a material that does not dissolve in liquid

Non-reversible/ irreversible - a change that cannot be reversed. New materials are produced as part of

React / reaction—two or more materials mixed together change to produce new materials

Reversible—a change where all materials involved can be changed back into their original

Saturated— when no more solid can be dissolved into a liquid

Soluble—a materials that dissolves in liquid to form a solution

Separate—to take apart a mixture of dry or wet and dry materials

Sieve—to separate solid materials from a mixture

Solution—a mixture containing solids that have dissolved in a liquid

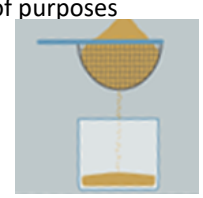
How can we separate mixtures?

Mixtures can be separated using methods such as filtering, sieving, and evaporating.

Filtering

A mixture of sand and water, can be separated by passing the mixture through **filter paper**. The water will pass through the filter, but the sand will be left on the surface of the filter paper. Filtering processes can be used to decontaminate polluted water and make it useful for a variety of purposes

Sieving



A mixture made of so ferent sizes, for example sand and gravel, can be sep .

Evaporating

By dissolving salt in water you make a **solution.** You can separate the salt from the water again by **evaporating** the water—the salt

What happens when we mix solids and liquids?

Some solids dissolve in water while others do not.

When a substance **dissolves**, it might look like it has disappeared, but in fact it has just mixed with the water to make a **solution.**

Substances that dissolve in water are called **soluble substances.** When you mix sugar with water, the sugar dissolves to make a solution. Salt is soluble in water too.

Substances that do not dissolve in water are called **insoluble substances.** When you mix sand or flour with water, they do not dissolve.

Solids which dissolve do so faster in certain conditions, for example by stirring or heating.

There is a limit to how much of a solid can be dissolved in a given amount of water. When no more of the solid (e.g. salt)

What makes a change non-reversible?

Changes of state (such as freezing, melting, evaporating, boiling, and condensing) are **reversible changes.** In some cases, the material may look slightly different when it is returned to its original state, but it remains the same material. Dissolving is another example of a reversible change.

Non-reversible changes occur when materials **react** to **produce new products** which cannot be turned back into the original materials. For example, cooking an egg is an example of a non-reversible change because the cooked egg cannot be changed back into a raw egg again.

Mixing substances can sometimes cause irreversible changes too. When vinegar and bicarbonate of soda are mixed together, carbon dioxide gas is made and the mixture left behind cannot be turned back into vinegar and bicarbonate of soda again.