Practical: Separation by Evaporation

Resources: (per group)

* 50ml hot water
* Beaker
* 5g salt/sugar/bicarbonate of soda
* Tea light
* Tea light stand/tongs
* A small aluminium dish
* Spoon

Activity:

In this activity the children use simple equipment to separate a sample of salt and water.

1. Dissolve the salt or sugar into a beaker of hot water, stirring well.
2. Pour the solution into the aluminium dish, so that it is around half to three quarters full.
3. Set up the aluminium foil dish over a tea light, either by holding it over the flame with tongs or by placing it on a stand, and heat it until the liquid has evaporated. Alternatively, pour the solution into a dish so that it forms a shallow layer and leave this in a warm area to evaporate more slowly. **Note:** If using sugar, the second option is preferable. This is because, if heated too vigorously, sugar will chemically change into caramel, rather than separating from its solution.

Explaining the Science

When substances dissolve, their particles break down into tiny pieces that are too small to distinguish in the solution. The substance is not chemically changed, as each particle retains all the same properties. Applying heat to a solution causes the liquid to evaporate, leaving the solid behind. This is a physical change. Dissolved sugar must be separated more slowly. If the sugar gains too much heat energy, it undergoes an irreversible chemical change, just as many substances do when they are cooked