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# How to Separate Salt from Water

**KS3** Ages 11-14 ⌚ 3 min read

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## What's the Problem?

Imagine you have a bowl of **salt water** — the kind you find in the ocean or in a salt solution. The salt and water are mixed together so thoroughly that they seem like one thing. But they're actually two different substances that can be separated! This is a really important process because people around the world need to turn **salt water** into fresh water for drinking, and factories need to extract salt for cooking and other uses.

## The Main Method: Evaporation

The easiest and most common way to separate salt from water is called **evaporation**. This is when water turns from a liquid into a gas (called **water vapour**) and floats away into the air. When you heat up salt water, the water evaporates, but the salt is left behind as solid crystals.

Think of it like a magic trick: imagine salt and water are two friends holding hands. When you turn up the heat, the water friend gets so excited that it jumps into the air and flies away as an invisible ghost (vapour). But the salt friend is too heavy to jump, so it stays behind on the ground as sparkly crystals!

Here's how it works in real life: pour salt water into a shallow dish and leave it in the sunshine for several days. The sun heats the water, which slowly evaporates. After a while, you'll notice white salt crystals forming at the bottom of the dish. The water has gone, but the salt remains!

## Other Ways to Separate Them

There's another method called **distillation**, which is more scientific and faster. This uses a special piece of equipment that heats the salt water and catches the water vapour as it rises. The vapour cools down and turns back into liquid water — but this time it's pure fresh water, completely separate from the salt that's left at the bottom of the container.

Think of it like a water slide: the water evaporates and travels upwards like it's going up the slide, then it cools down and slides back down into a clean container. The salt never makes the journey — it stays at the start!

## Why Does This Matter?

This separation technique has been used for thousands of years. In hot countries with lots of sunshine, people build huge ponds called **salt ponds** where sea water evaporates naturally, leaving behind valuable salt. Today, **desalination** plants use these methods to turn ocean water into drinking water for millions of people in dry countries. Understanding how to separate salt from water helps solve real-world problems like water shortages and producing essential minerals.