

In this unit we will

1. Compare and group everyday materials according to their properties
2. Investigate the separation of materials, including filtration and evaporation
3. Explore how some materials will dissolve and what this means in terms of the particle model
4. Learn that some changes are reversible, while others are irreversible

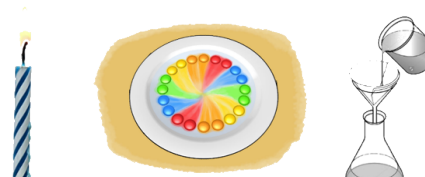
**Science Skills that we will develop:**

Explaining Science

1. I use complex science words correctly
2. I use a science model to describe and explain
3. I draw & annotate diagrams to help describe/explain

Designing Experiments

1. I use knowledge & understanding to make a hypothesis
2. I plan a reliable fair test
3. I plan to minimise risk & act on safety suggestions
4. I plan to collect repeat readings and calculate the mean



**Properties and  
Changes of  
Materials**

We will be using a method called **filtration** to separate **insoluble** materials from water.

- Science knowledge Objective: I understand that some solids are **insoluble** (do not **dissolve** in a liquid) and can be recovered using **filtration**
- Science skill Objective: I begin to use complex science words correctly to describe and explain what I observe, using the **Particle Model**.

Unlike the sand, soil contains a wide range of different sized particles, some **soluble** (dissolve in the water), some **insoluble** (do not dissolve).

Most of the insoluble particles settled at the bottom of your beakers (what **force** was acting on them, to make them end up at the bottom of the container?).

The rest of the finer particles are either floating around in the water, or have **dissolved** to become part of the liquid.

Now set up your filtration equipment again with clean filter paper, stir the soil mixture once more and carefully pour half into the paper cone. Observe closely.

Now write about your filtration experiment, using the **Particle Model**.

Can you *describe* what you did using scientific words?

Can you *explain* what happened?

Can you *work out* why the filtrate water was not completely clean?

\* I use simple science words correctly to **describe** what happens when water is filtered

\*\* I **begin** to use complex science words correctly to **describe and explain** filtration

\*\*\* I use complex science words correctly to describe and explain filtration more fully

soil particles      water particles      insoluble      filtrate

filter paper      dissolve      clearer      soluble

filtration      soil mixture      fibres      residue

Paragraph 1	What were you investigating?
Paragraph 2	What did you do for the mixing? What resources did you use? What did you notice? (describe) Why did this happen? (explain)
Paragraph 3	What did you do for the separation? What resources did you use? What did you notice? (describe) Why did this happen? (explain)
Paragraph 4	What was similar and different when you investigated the mixture and separation of soil and water? (describe) Why was this? (explain)

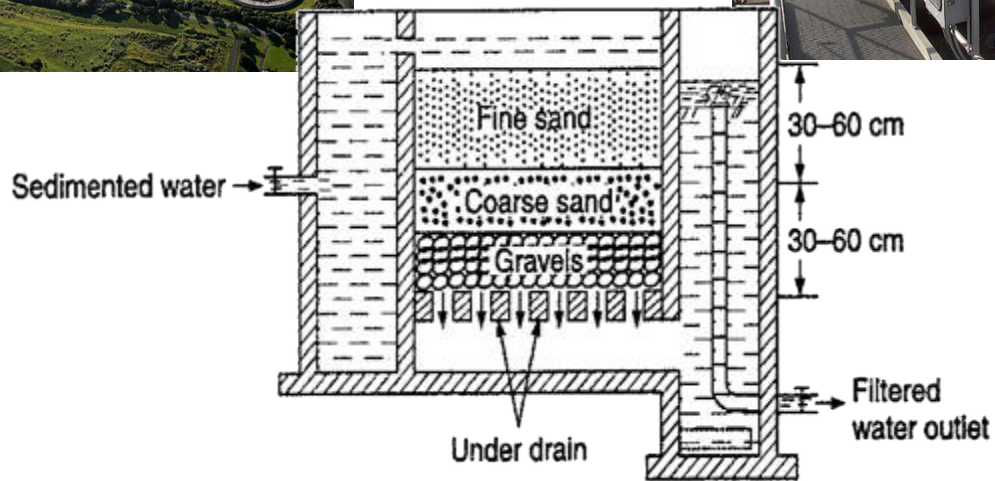
Using the questions above, discuss with your partner last week's investigation.

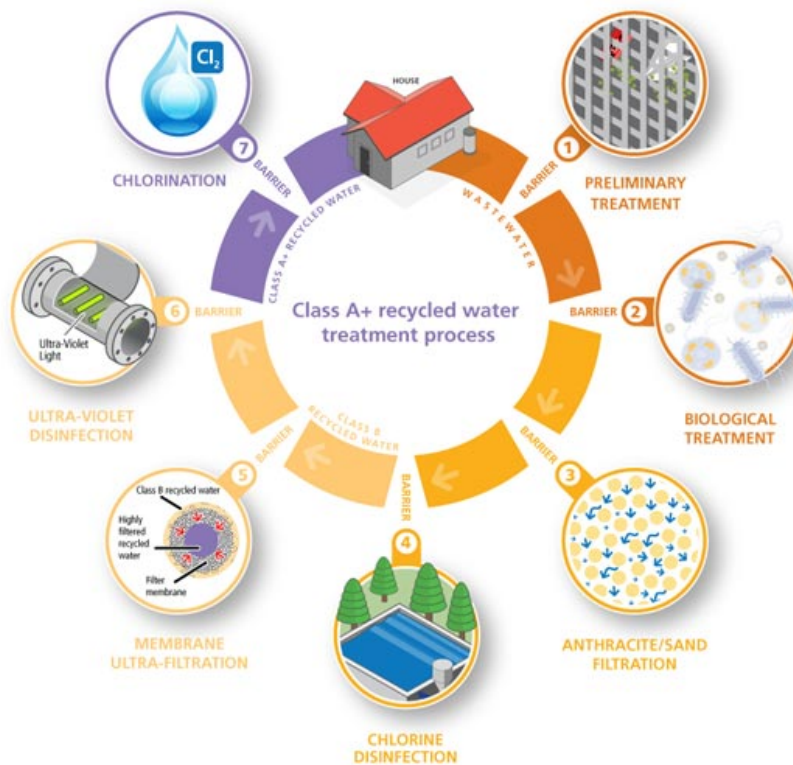
When writing, use this to help organise your ideas.



### Sewage treatment

Sewage water is filtered by layers of sand and gravel



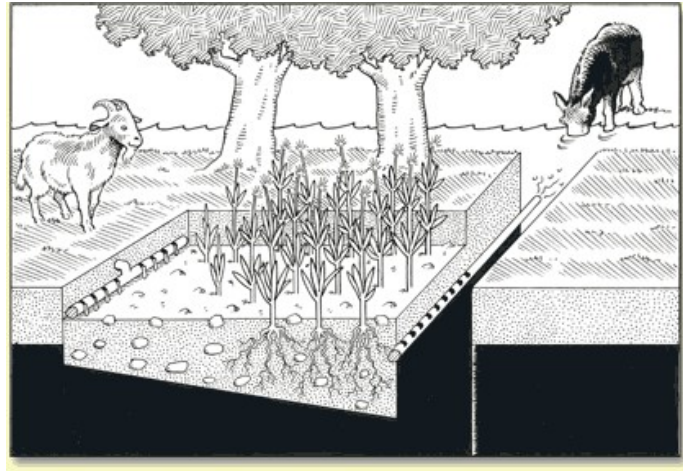


To make our water safe to drink, it also passes through very fine sieves, and ultra-violet light is used to kill off any harmful organisms left in it.



Reed bed water treatment - a more eco-friendly way...

The reed plants absorb most of the waste in the sewage water - it provides them with nutrients. Also, algae in the beds deal with the bacteria.





What else can you think of that uses filtration?