

**Learning Objectives - WALT (We are learning to...)**

- How nappies work to soak up liquids
- How molecules work and chemical reactions
- How liquids and solids can interact with each other in different ways

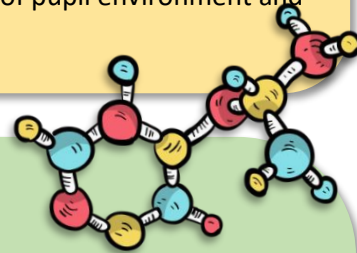
**Curriculum links**
Mixing and changing

- Investigate how materials may be changed by mixing
- Investigate the characteristics of materials when wet and dry
- Explore some simple ways in which materials may be separated

Recording Predicting
Communicating
Observing
Analysing Questioning
Investigating and Experimenting

Teaching Methodologies

- **Talk and Discussion** - listening, questioning
- **Collaborative/Cooperative Learning** - group work
- **Active Learning** - hands on experience
- **Skills through Content:** observing, predicting, experimenting, describing, categorising, recording and communicating.
- **Using Local Environment** - use of pupil environment and lived experience.

**Introduction:**

What is a nappy and how does it work?

Nappies contain a very special chemical called Sodium Polyacrylate. This chemical soaks up liquids like water or urine (wee!) and changes from a powder to a jelly to a solid and can be changed back again.

Sodium polyacrylate is a very long *molecule*, so it really, really likes water. So much so, that when it touches water it interacts with the water, like its soaking it up so make a fluffy powder a bit like snow. In fact this is how fake snow is made! it is also used in other things you can buy like gardening and animal products.

So, we can use Sodium polyacrylate to absorb water and create a solid. Do you think we can change it back? Adding salt begins to turn the jelly back into a liquid. This is because the long molecule of Sodium polyacrylate that "captured" the water captures the salt instead, and lets the water go free!



Experiment

Cut open the nappy (ask an adult for help if you need) and empty the Sodium Polyacrylate into the plastic cup.

Measure out 100 mls of water using the jug and to check at eye-level to ensure they have the right amount.

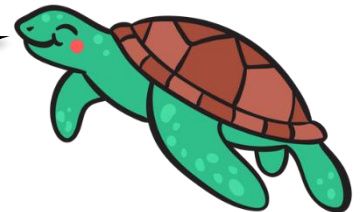
Pour the water slowly into the cup containing the sodium polyacrylate, stopping every so often how the powder is changing.



What is happening? We had a powder and liquid, which turned into a liquid, which then became a solid. This is a **chemical reaction!** The sodium polyacrylate molecules “like” the water molecules and they grab a hold of each other and so expand and become a white fluffy solid.

Now lets add salt into the mixture to see what happens. We get another chemical reaction! Sodium polyacrylate likes water, but it **LOVES** salt. When we add salt it lets go of the water and traps the salt. This means the water is now free and we see the mixture turning back into a liquid as it separates out again!

Everyone's nappies are still sitting in landfills, or worse in the sea! We must learn to find reusable products so we don't keep harming the Earth!



REFER BACK TO YOUR **WALT** GOALS AND HAVE THE CHILDREN SHARE WHAT THEY LEARNED TODAY AS WELL AS RECAPPING ON ANYTHING THEY MISSED!