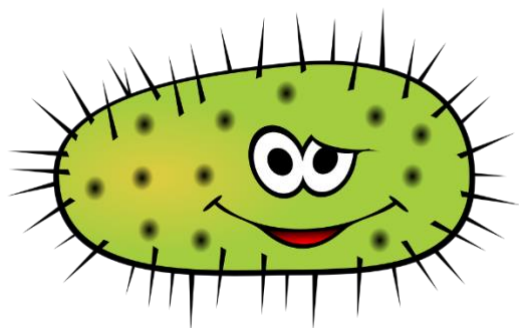


Hydrophobia

How long does plastic last in the environment?

Some people claim that plastic waste in the environment will last 1,000 years, but in warm composters or for very thin plastics like bags, this could break down in just 10 –20 years..



Plastic-eating bacteria have been found in the oceans, showing that nature has already adapted to the huge volumes of plastic debris created by humans every year.

Key stages 3– 5

Resources needed

20 mins

Image: Pixabay

<https://pixabay.com/vectors/bacteria-virus-illness-bacterium-156869/>

More reading:

<https://www.envchemgroup.com/norman-billingham.html>

What happens if you place plastics in water?

Resources needed:

3 plastics (e.g. plastic bag, milk bottle top, packing peanuts)

Water

3 other materials, e.g. scrap paper, a few teaspoonfuls of salt/sand/oil

Instructions:

- One by one, place each of the materials in water
- Write down your observations

Material	Observation in water

Key stages 3- 5

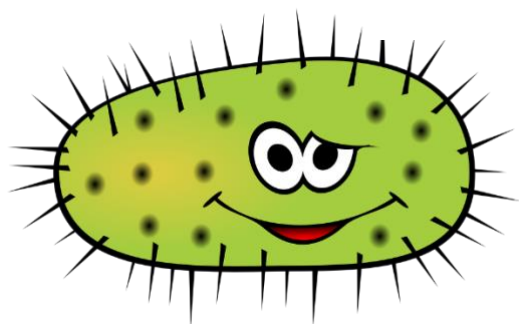
Resources needed

20 mins

Plastic and oils are hydrophobic - this means they repel water. Why does this mean plastics take a long time to break down in the environment?

Easy: What's the difference between condensation polymers and addition polymers?

Hard: What makes a plastic biodegradable?



Some drugs and personal care products don't break down easily in the environment: these are called POPs: persistent organic pollutants. They are soluble in oil and plastic, and accumulate in waste plastics. When these get eaten by worms and fish, they enter the food chain and **bioaccumulate**.

What does **bioaccumulate** mean?

Key stages 3- 5

Resources needed

20 mins

Resources needed:

Scrap paper

Water

Crayon or crayons

Watercolour paints and paintbrush

Make your own paper

Instructions:

- Take your water-soaked scrap paper, and mush it up with your fingers.
- Press it together on a surface and flatten it. You may wish to place a weight on top.
- Wait for it to dry.

Plastic art

Instructions:

- Use a crayon (paraffin wax) to draw on a sheet of paper
- Paint over the paper using watercolour paints
- Record your observations:

Comment on the relative ease of recycling paper versus plastic:

Key stages 3- 5

Resources needed

20 mins