



# Practical investigation – Fats, oils and grease experiment

Find out what happens when fats, oils and grease (FOGs) go down the drain.

**Need some lesson ideas?** Our [High school](#) webpage has an accompanying syllabus linked lesson plan to support this experiment.

## What's wastewater? Why are FOGs a problem?

All the water you've used inside your house from the toilet, sinks, bath, shower and laundry, go down drains. This water is called wastewater, its 99% water. The remaining one per cent is made up of things you've added as you've used it. Sometimes this wastewater doesn't make it to our wastewater treatment plants. Sometimes it gets blocked or overflows because of fatbergs.

Fatbergs are made of FOGs (fats, oils and grease), wipes and other rubbish in the wastewater system, and we make them!

- Have you poured some spoilt milk down the sink?
- Let the oil from the frypan go down the drain?
- Maybe the oil from a pot or a can of tuna?

Today, we'll look at how fatbergs are made. We'll also bust a myth that soap helps.

### Did you know?

That around 70% of wastewater in Greater Sydney comes from homes. See our [Wastewater treatment](#) webpage for more information.

## What you'll need

**Safety first!** Adult supervision required. Follow all safety instructions as directed on product packaging.

- 4 clear heatproof jars
- 200 mL tap water
- 100 mL olive oil
- 200 g butter, coconut oil or margarine
- hot plate or microwave
- small measuring cup
- masking tape
- marker
- stirrer or spoon
- 1 tsp cocoa powder, bits of wipes, dental floss, cotton buds



Example of materials for your experiment

## Activity

1. Which mixtures do you think will separate, form oily films and fatbergs?
2. Gather all the equipment. Label jars with letters A to D.
3. Melt butter (or butter substitute) using microwave or hot plate.
4. Using a measuring cup. Pour the FOGs in the jars and detergent in the last.
  - Mixture A: 50 mL olive oil
  - Mixture B: 50 mL butter
  - Mixture C: 25 mL olive oil + 25 mL butter
  - Mixture D: 50 mL butter + 3 drops of detergent
5. Add 1/4 tsp of cocoa powder, cotton buds, torn wipes and floss into each sample for extra colour and texture.
6. Add 50mL of tap water into each mixture and shake or stir the mixture until well combined.
7. Leave on a flat stable surface in a cool area or the fridge and record observations over time.
8. After the experiment clean up, pour contents in bin or compost. Don't put it down the drain!



Step 2



Step 5



Step 8

### Extension activities

- What happens if you used hot FOGs or hot water? Be careful though, it doesn't stay hot for long! What happens when it cools down?
- What happens if you use other types of FOGs?

### Results

Describe your observations like a scientist. Can you describe what's happening?

- How big is the fatberg or fatty film which coats the jar? What's happened with the water?
- Do you have more notes or want to make a scientific illustration?

Time	Hypothesis and observations			
	Mixture A	Mixture B	Mixture C	Mixture D
0 (hypothesis)				
10 min				
60 min				
24 hrs				

### Discussion

- What happened to the FOGs, items and water?
- Was your experiment a fair test?
- Did you replicate the conditions of wastewater pipes?
- What did you learn? What can you tell friends and family?

### Did you know?

Wastewater from your sink leaves your kitchen, house, goes into a sewer main under the street and to a treatment plant. Along with many other houses. We have 26,169 km of wastewater pipes! See where they go on our *Wastewater network map* in our [How we manage Sydney's water](#) webpage.

### Want to know more?

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