

# Oil Spill

4

## Big Idea

Some liquids mix with water and some don't.

Oil and detergent behave in different ways when added to water.

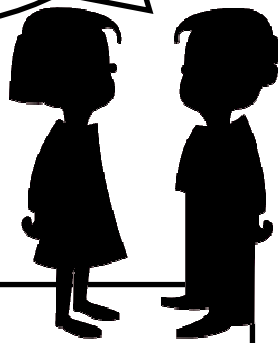
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2

1

Level

The activity is aimed at this level but can be modified to suit other levels.



## What you need to know

- Pollution is when we add things to the ground, air or water that will make it dirty or bring harm to life in and around it.
- Some liquids will mix with the water and some liquids will not.
- Liquids that do not mix with each other are **immiscible**.
- Liquids that do mix together are **miscible**.
- Oil and water do not mix – they are immiscible.
- Detergent and water do mix.
- When detergent is added to oil it breaks the oil into smaller droplets and disperses it through the water. The oil and detergent are still there.

## Learning Intentions

- ✓ We are learning about how liquids behave when mixed with water.

## Success Criteria

- ✓ I can explain the terms immiscible and miscible in my own language.
- ✓ I can explain what happens when you mix detergent and oil in water.

## Other Resources

### Connected

Why we have soap (Number 3, 1998)

### School Journals

Oil Spill – Are we prepared (Part 4, Number 1, 1995)

## Curriculum Links

### Nature of Science

Participating and contributing – Explore various aspects of an issue and make decisions about possible actions. (L3/4)

Investigating in science – Ask questions, find evidence, explore simple models and carry out appropriate investigations to develop simple explanations. (L3/4)

### Material World

Properties and changes of matter – Group materials in different ways, based on the observations and measurements of the characteristic chemical and physical properties of a range of different materials. (L3/4)

### Key Competencies

Participating and contributing – Relate their science knowledge to issues affecting the world.

Thinking – Make predictions and explain their observations.

## What you need

- 2 clean 2 litre bottles with lids
- 3 cups of water
- 1 cup of oil
- Funnel
- Liquid detergent

## What to do

### Introduction

- What is pollution?
- What have you heard or read about it? (referring to oceans, lakes, rivers, streams)
- Do you ever think about whether the water you swim in is safe?
- Have you ever been concerned about the fish we eat being poisoned and harmed from living in polluted water?
- What things may cause pollution of water?

This experiment involves making an ocean in a bottle.

1. Put 3 cups of water into the 2 litre bottle.
2. **Predict** – What do you think will happen when oil is poured into the water?
3. Use the funnel to pour 1 cup of oil into the bottle of water and put the lid on.
4. Mix up the liquids by shaking the bottle.
5. **Observe** what happens.

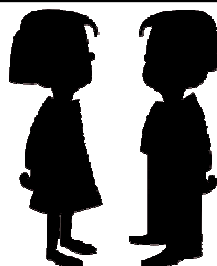
- What do you think happens when there are spills in the oceans?
- How will oil affect the water, the fish, plant life or animals that live in or near the water?

You may want to leave the bottle tipped on its side overnight. The next day see if the oil settled or not. (The oil should be floating on the water.)

6. Using a clean bottle repeat the above experiment replacing the oil with liquid detergent.
7. **Observe** what happens. (The detergent should mix with the water.)

You may want to leave the bottle tipped on its side overnight. The next day see if the mixture has separated.

8. Using a clean bottle add 3 cups of water,  $\frac{1}{2}$  cup of oil and  $\frac{1}{2}$  cup of detergent. Screw on the lid and shake the bottle to mix.
  9. **Predict** - What do you think will happen? **Observe** what has happened.
- Is the oil still there? What has happened to the oil?
  - Is the detergent still there? What has happened to the detergent?
  - Would you use detergent to clean up an oil spill? Why/why not?



### What's Next?

Investigate how to clean up an oil spill.