

ACTIVITY

INVESTIGATING OCEAN CURRENTS

The temperature and amount of salt in ocean water varies. These changes are important in the flow of ocean currents.

EXPERIMENT 1: TEMPERATURE CHANGES

WHAT YOU NEED

- Water
- Food colouring
- A cold source (e.g. an ice pack or ice wrapped in foil)
- A rectangular transparent dish

WHAT TO DO

1. Fill the dish with warm water from the tap.
2. Place your cold source at one end of the transparent dish.
3. Carefully dribble some food colouring down the side of the cold source into the water.
4. As the colouring enters the water it will sink to the bottom then slowly spread along the base of the dish away from the cold source.
5. When the colouring reaches the far end it will rise to the top and journey along the surface back towards the cold source.



WHY?

Water next to the cold source is cooled down. The cold water has food colouring in it. As cold water is denser than warm water it sinks to the bottom. This is what happens at the North and South poles. The cold water spreads along the bottom of the dish pushing the water in front of it out of the way. When it reaches the end of the dish it is forced up to the surface (e.g. at the equator). Warm water is dragged in the opposite direction towards the cold source. This is called thermal circulation.

EXPERIMENT 2: SALTY WATER

WHAT YOU NEED

- Water
- Salt
- Food colouring
- A rectangular transparent dish
- A jug

WHAT TO DO

1. Fill the dish with cold tap water.
2. Make a very salty solution of water by pouring some water into a jug, adding a large amount of salt and stirring to dissolve all the salt. Keep adding salt until no more can be dissolved and it sits in the bottom of the jug.
3. Colour the salty water strongly with food colouring.
4. Gently pour the salty water into the dish by allowing it to flow slowly down one of the sides of the dish.
5. The coloured water will spread along the bottom of the dish forming a distinct layer separate from the fresh water above it.

WHY?

Salty water is denser than normal water so it sinks to the bottom. The layers remain separate – they take a long time to diffuse into each other unless you mix them. Sea water is particularly salty at the poles because when sea water freezes into ice, it leaves its salt behind in the remaining water.