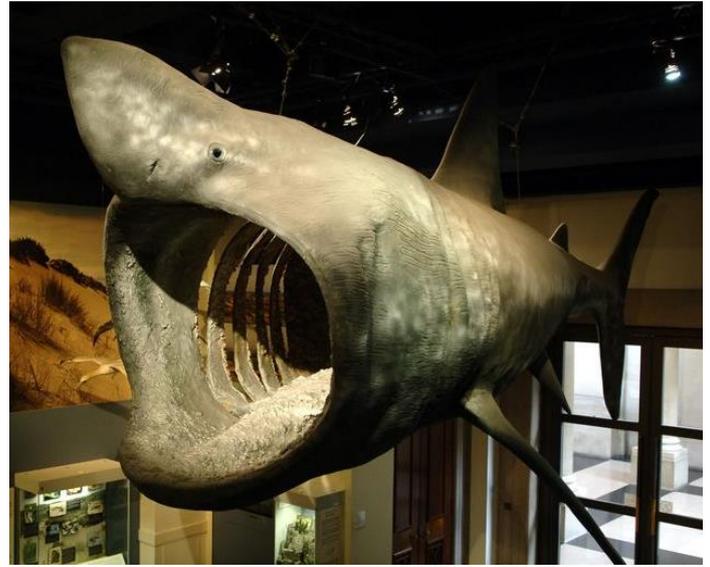


Convection Currents

Ocean currents are essential to all sorts of marine life, including the basking shark.

Why not investigate ocean currents in your kitchen?

How does temperature affect the movement of fluids?



You will need:

- Two identical transparent bottles (plastic is safest!)
- Two measuring jugs
- Two different colours of food colouring (yellow and blue work well)
- Hot and cold water
- Some thin card (e.g. a playing card)

Instructions:

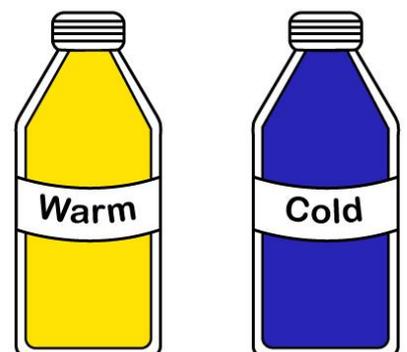
This activity uses hot water. Ask an adult for help and take care.

This activity could get messy. Try it over the sink.

1. Add a few drops of one colour to one jug and roughly the same amount of the other colour to the other jug.

2. Fill one bottle to the brim with cold water. Pour everything into one jug. Fill the other bottle to the brim with hot water and pour everything into the other jug (it's a good idea to add a little bit extra water to each jug, just in case).

3. Pour the cold water into one bottle and the hot water into the other. Both bottles should be full to the brim.

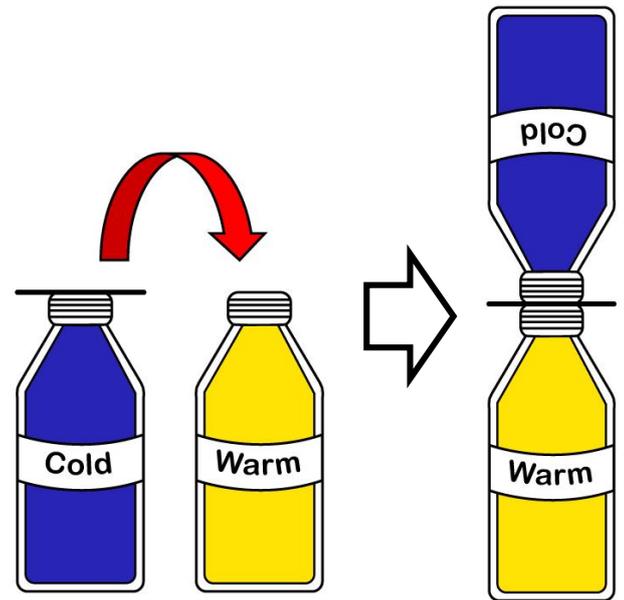


Convection Currents

4. The Tricky Part! Place the card over the mouth of the cold water bottle and carefully turn it upside down, making sure no water escapes.

5. Keeping the card in place, place the mouth of the cold water bottle over the mouth of the hot water bottle. Make sure the bottle mouths exactly align.

6. Carefully remove the card so that the liquids can mix. Don't let the bottle fall over!



What is happening?

Both bottles contain water, however the temperature is very different between the two. This temperature difference affects how the fluids move.

Hot water is less dense than cold water. Hot water will therefore rise while cold water will sink. As water rises or sinks, nearby water is pulled along into the new space.

This movement of hot and cold fluid is called “convection”. Convection is always happening all around us - in the atmosphere, the oceans and even in the centre of the Earth.

Where Next?

Try the experiment again with the cold water on the bottom. Is the effect similar? What's different?

Try using different colours of food colouring. Which patterns do you prefer?



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