

SCIENCE FUN AT HOME



Have some fun at home with these science activities from **Science Sparks** and the **Primary Science Teaching Trust**



BEFORE YOU START! Please read through this with an adult:

- * Make sure you have read the 'IMPORTANT NOTICE' on the back of this page.
- * If you have a space outside that you can use safely, then you can do the 'Try this outdoors' activity outside. Don't worry if not as you could still do it indoors.
- * Talk to your adult about sharing the science you have done and if they want to share on social media, please tag **@ScienceSparks** and **@pstt_whyhow** and use **#ScienceFromHome**

WHAT A GAS!

1 TRY THIS INDOORS

First, fill the bottle about one quarter full of vinegar. Then stretch the balloon by blowing it up and then letting the air out. Use a funnel to put 3 spoons of bicarbonate of soda into the balloon. If you don't have a funnel you can make one by rolling paper into a cone. Stretch the balloon over the top of the bottle, keeping the bicarbonate inside the balloon. When you are ready tip the balloon up so the bicarbonate of soda drops into the vinegar in the bottle.

You will need

- * A small bottle
- * Balloon
- * Bicarbonate of soda (baking soda)
- * Funnel and spoon
- * Vinegar
- * Lemon/lime juice (optional)
- * Plastic cup
- * Small piece of card or plastic

WHAT DO YOU NOTICE?

Things to talk about ...

What happens when the bicarbonate of soda mixes with the vinegar? Why does the balloon blow-up? What are the bubbles that you can see? If you hold the bottle in your hand what can you feel? How could you make the balloon blow-up more? What if you added more or less bicarbonate of soda, or used lime or lemon juice instead of vinegar?



2 TRY THIS OUTDOORS

Fill a plastic drinking cup with water. Cover the top of the cup with a piece of card or thin plastic. Hold onto the card and turn the cup upside down. Then let go of the card and it should stay where it is! You might want to put a bucket or big bowl underneath to catch the water to catch any accidental spills.

WHAT DO YOU NOTICE?

Things to talk about ...

What do you think is stopping the water from coming out?
How long will the water stay in the cup? Would this work with water in a bottle? Would it work with a bigger cup?



3

WHAT IS THE SCIENCE?

When bicarbonate of soda is mixed with vinegar, a chemical reaction occurs. This means that new substances are formed. In this reaction, carbon dioxide is made. This is the gas in the bubbles that you can see. The carbon dioxide gas produced spreads out to fill up the space available, and this makes the balloon blow up. This reaction needs energy which it takes from the heat in its surroundings. This is why the bottle feels cold: the reaction is taking the heat from your hand.

For the water to come out of the cup, air needs to be able to get in. With the card there, the air cannot get in because of a combination of the air pressure under the card pushing the card up, a decrease in the water pressure in the cup, and the surface tension creating a seal between the water at the rim of the cup and the card. If this seal is broken, e.g. by water evaporating from the edge of the cup, air will move into the cup and then the water will be able to come out.

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MORE ACTIVITIES YOU COULD TRY

MAKE A MODEL OF A LUNG www.science-sparks.com/breathing-making-a-fake-lung/

MORE ABOUT GASES www.wowscience.co.uk/resource/solids-liquids-and-gases-intro/

MAKE A BOAT www.science-sparks.com/baking-soda-powered-boat/

CHANGES OF STATE www.wowscience.co.uk/resource/solids-liquids-and-gases/

TAKE A SCIENCE SELFIE! Maybe you could show other people what you have been doing?

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These activities are designed to be carried out by children working with a parent, guardian or other appropriate adult. The adult involved is fully responsible for ensuring that the activities are carried out safely.