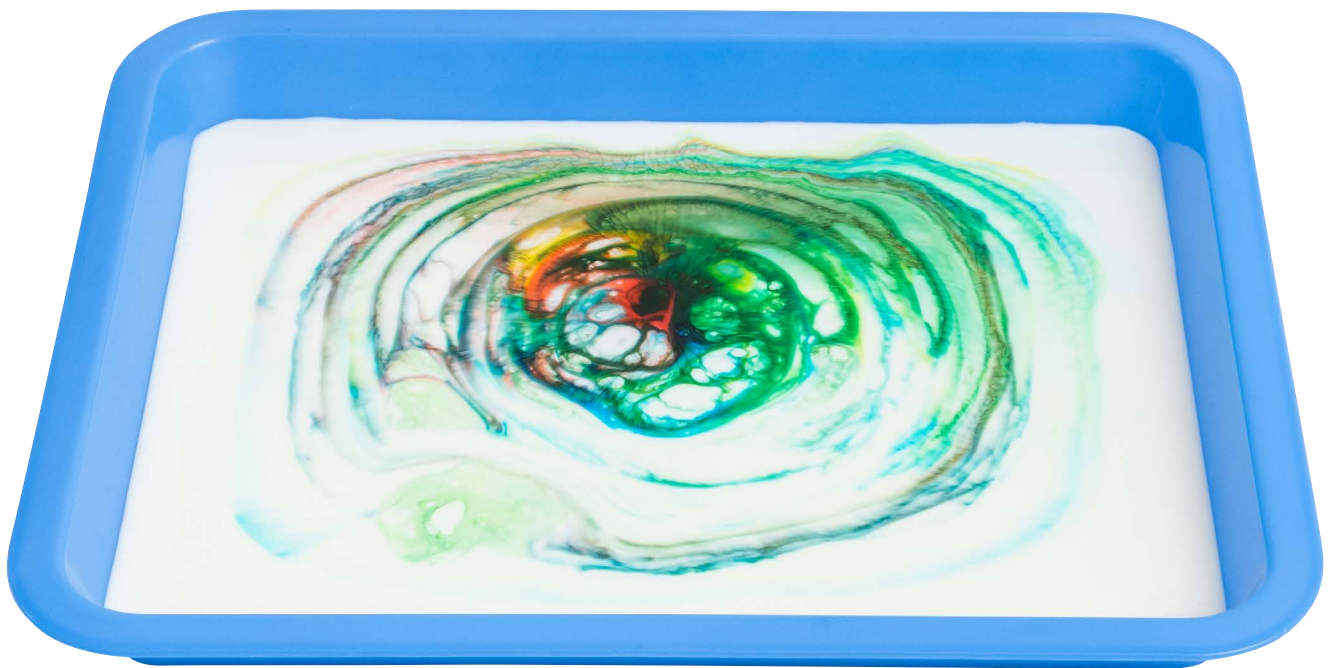




SCIENCE MUSEUM GROUP



MILK MAGIC

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| MAKING  | Age 7-11 11-14 | Topic MATERIALS, FORCES |  20 MIN |
| | Skills used MAKING OBSERVATIONS • CURIOSITY | | |

Overview for adults

Soap is something that most people probably take for granted, but it has some really interesting properties. This activity uses soap to disrupt the surface tension of milk, producing swirling colourful patterns of food colouring dissolved in milk.

What's the science?

Food colouring dissolves well in pure water. Milk is mostly water, but it has billions of tiny droplets of fat suspended in it. Food colouring doesn't dissolve in fat, so the droplets prevent the food colouring from mixing very far into the water.

The water molecules at the surface of the milk are all pulling on each other, so the surface is under tension. Washing-up liquid reduces the surface tension, but only where the drop falls. Like the rubber of a burst balloon, the rest of the surface rapidly pulls away, and this causes the milk to churn and mix, resulting in the colours you see.

Science in your world

You can't blow bubbles in pure water, because water's strong surface tension pulls it into round droplets. Dissolving soap in water reduces the surface tension, making it possible to blow bubbles.

Did you know...?

The earliest recorded evidence of soap dates all the way back to around 2800 BCE.

Can you make milk move without touching it?

You will need...

Flat plastic tray



Cotton buds

Food colouring (red, yellow, blue and green)



Washing-up liquid



Whole milk

Think and talk about...

- What colours do you think you will see when the different food colourings mix?
- What is making the food colouring move?

Investigate...

- What happens if you use different types of milk, such as semi-skimmed, low fat or soya milk?
- What happens if you use water instead of milk? Will it still work?
- Try different types of soap and see which one works best.

Follow these steps...



1 Pour milk into a tray so that the bottom is just covered.



2 Carefully put drops of food colouring in a circle near the middle of the tray.



3 Dip a cotton bud in washing-up liquid...



4 ... and then in the centre of the milk. Watch the colours swirl!

Science in your world

Dissolving soap in water reduces water's surface tension, making it possible to blow bubbles.

