Sparkling water

At Little Scientists we are all about spotting STEM opportunities in the everyday. Exploring with sparkling water, or to children more commonly known as fizzy water, might not be an everyday occurrence. It is a fascinating way to introduce gases (in this case carbon dioxide) and if you have access to a soda stream, it could be even more fun!

Method

Provide the children with a selection of small items and a glass of sparkling water. Encourage the children to share the items you have selected to explore with – this fosters peer communication and forms an integral part of discussing STEM explorations. If you have magnifying glasses, hand these out to aid discovery and communication.does the experiment work when you use a sultana?

Equipment list

Sparkling water
Small items to drop in (we used raisins, beads, sesame seeds, cotton wool and Mentos sweets)
Glass
Optional: magnifying glasses

Observations, conclusions, ideas

As the bubbles get trapped under the raisin or sultana it becomes buoyant enough to float to the surface of the water. As the raisin tips, the bubbles escape and it sinks. The beads may also work in the same way. The Mentos does eventually dissolve in the water, but the initial fizzing is just the same phenomena. Why does the Mentos cause such a large amount of fizzing? Well, it is all to do with the surface area of the Mentos. Look closely at the Mentos through a magnifying glass and you can see little bubbles which increase the surface area. This is also the basis of the famous Mentos and cola activity. This is a quiet activity that allows for time to look at the different phenomena in depth and encourages discussion which is a wonderful way of introducing children to changes of state.

What's the STEM?

This is an activity straight out of our Chemical Reactions workshop - but it is actually NOT a chemical reaction. When you drop a bead into the sparkling water, it doesn't react with the water to produce bubbles. The bead remains unchanged. So, what is happening? Sparkling water is plain water that has been infused with carbon dioxide gas under pressure. The carbon dioxide which is in the water forms bubbles around the surface of each item and causes them to float to the surface.
The carbon dioxide that has been dissolved in water under pressure to form carbonated water is changing state. Common changes of state include melting, freezing, condensation and vaporisation.