



# What is CO<sub>2</sub>?

## The CO<sub>2</sub> Lava Lamp



Name: \_\_\_\_\_



### You will need

- 20oz plastic water bottle, ¼ filled with water
- Water
- Vegetable Oil
- Food colouring
- ½ an Alka-Seltzer or other similar effervescent tablets



**WARNING:** Safety first! Please wear safety glasses to protect your eyes. Do not put the cap on the bottle during this experiment bottle – the increased pressure could cause it to shoot off the bottle.



### What to do

#### To Make The Lava Lamp:

1. ¼ fill a 20oz plastic water bottle with water.
2. Fill the remainder of the bottle with vegetable oil – nearly to the top but not quite!
3. Add 15 drops of food colouring to the bottle.
4. Add ½ of an Alka-Seltzer tablet to the bottle.



### Questions

What do you think will happen when you add the Alka-Seltzer tablet to the bottle?

What happens to the gas rising up the bottle?



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### What's happening?

In the CO<sub>2</sub> Lava Lamp, the oil and water that you add to the bottle don't mix well together - the oil rises to the top of the bottle, and the water stays underneath because it is denser than the oil.

The food colouring works its way through the oil and happily mixes with the water. Then the Alka-Seltzer tablet reacts with the water releasing CO<sub>2</sub> gas which wants to go straight to the top of the bottle. The CO<sub>2</sub> gas bubbles take some of the coloured water all the way up to the top of the bottle with them, then as the CO<sub>2</sub> escapes the bottle, the coloured water falls back to the bottom.

If you cover the top of the bottle with your hand, you are capturing CO<sub>2</sub>. In Decatur, Illinois, CO<sub>2</sub> is being captured from ethanol production (give the Richland Community College Biofuels Experiment a try to make your own Ethanol) and it is being stored deep underground to reduce the CO<sub>2</sub> being released in the atmosphere which is contributing to climate change.



### Did you know?

You can reinvigorate your CO<sub>2</sub> Lava Lamp at any time just by adding more Alka-Seltzer to the bottle – the reaction should keep going for quite a while!