

# COOL EXPERIMENTS

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## Climate change in a jar

The amount of carbon dioxide in our atmosphere has been climbing since the industrial age. What impact does this have on our climate? In this experiment students compare a control 'atmosphere' to an atmosphere rich in carbon dioxide.

**Preparation time:** 10 minutes

**Experiment set up time:** 10 minutes

**Experiment run time:** 30 minutes - 60 minutes

You will need:

- 2 identical jars with lids
- 2 thermometers that fit inside the jars
- bicarbonate soda
- white vinegar
- a long spoon
- a sunny spot, or a heat lamp
- 2 chocolate frogs (optional)

### Before you start

For this experiment we will need to place a thermometer inside each of the jars to measure the temperature over time. The jars will need to be sealed for this experiment to work properly! If you plan on using probe thermometers, you will need to punch holes in the lids ahead of time and use something like plasticine to seal the openings.

A fun optional extra is to add a chocolate frog to each jar and compare the impacts on the frog. As one jar will have a mix of bicarbonate soda and vinegar in the bottom, we recommend either leaving the chocolate frog in a waterproof wrapper, or tying a string around the frog and suspending it in the middle of the jar.

# Hypothesis

There will be a difference in temperature between the control jar and the jar with carbon dioxide.

## Step 1

In one jar, add one table spoon of bicarbonate soda, and 1/3 cup of white vinegar.

## Step 2

Use the spoon to gently mix until the mixture stops bubbling and completes the reaction. This jar will now have a high level of carbon dioxide.

## Step 3

Place a thermometer (and optionally a chocolate frog) in each jar. Screw the lid on tightly.

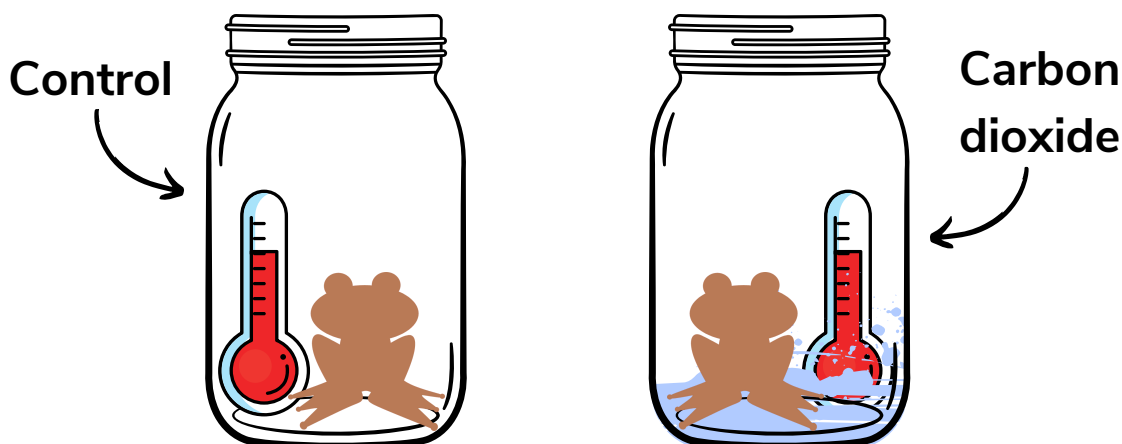
**Carbon dioxide is heavier than air. As long as you do not disturb it the Carbon dioxide will remain in the jar!**

## Step 4

Record the starting temperature of both jars.

## Step 5

Wait at least 30 minutes, or up to 60 minutes. Observe the temperatures in both jars. What happened to the chocolate frogs?



**Extension:** Set up a camera with a timelapse function to monitor the temperature in the jars, and the state of the chocolate frogs.

