

C3 ACTIVITY 1: GLOBAL WARMING IN A BOTTLE

Background

Carbon dioxide (CO₂) is one of a number of gases that contribute to **global warming**. In this activity, students mimic the global warming effect by creating high levels of CO₂ in a bottle. This demonstrates the heating consequences of CO₂.

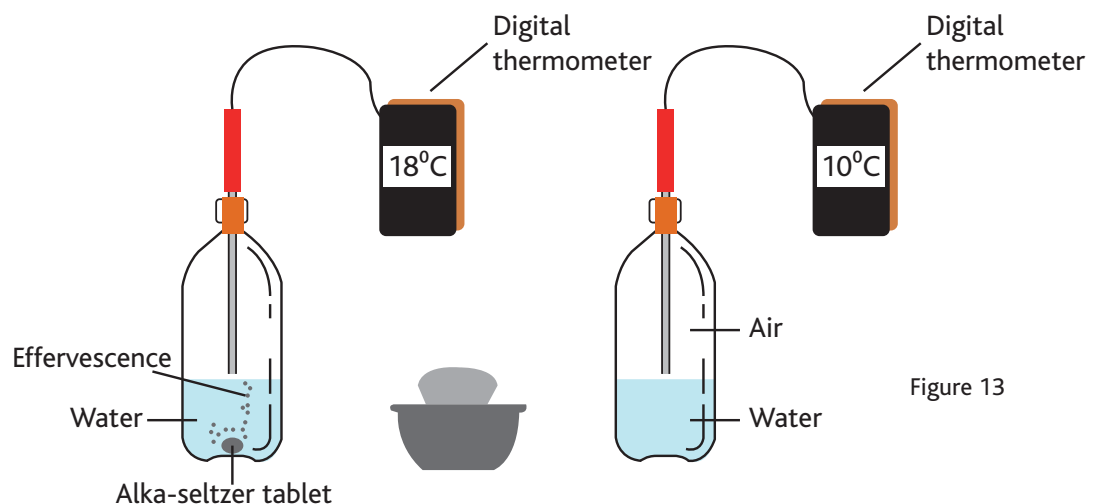
Equipment required (per group):

- Two large, clear plastic fizzy drinks bottles
- Alka-Seltzer tablets (or similar)
- Beaker with water
- One heating lamp (or similar)
- Two thermometers (digital thermometers give better results)
- A CD pen or other marker suitable for writing on the bottles

Suggested approaches:

- This investigation can be used as a starting point for a discussion on global warming or the carbon cycle among other topics. Before beginning, contextualise the learning with a short introductory discussion on **greenhouse gases**, **global warming** and their **consequences**.
- As the temperature rise is gradual, it is best if each group is given a different number of tablets.
- It is not imperative for the students to have prepared CO₂ in the laboratory before taking part in this activity. It is enough to explain to them that the effervescence indicates the release of CO₂.

What to do:



1. Set up the bottles as shown in Figure 13. Put equal quantities of water into each bottle (about ½ l).
2. Take the initial temperature of both bottles and record them.
3. Uncap one of the bottles, drop the Alka-Seltzer tablets into it and re-cap it.
4. Place both bottles at equal distances from the heater and switch it on.
5. Monitor the temperature of both bottles within an agreed time.
6. Compare your results with those of the other groups.

❓ *Are there differences in results?*

❓ *Why might this be?*