

## Effects of carbon dioxide on temperature

### Key Stage 2

#### NC references

##### Working Scientifically

- making systematic and careful observations
- reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions
- using straightforward scientific evidence to answer questions or to support their findings.

#### Learning objectives

To observe and consider the effects of carbon dioxide on temperature

#### Teaching ideas

##### Explore

Learn about the greenhouse effect/ global warming and how scientists consider that the increase in carbon dioxide and other gases contributes to the increase in global temperatures. This video could be helpful:

<https://www.youtube.com/watch?v=oJAbATJCugs>

#### Investigate

Complete this observing over time investigation to show the effects of carbon dioxide on temperature

#### Resources

- 2 x 2litre plastic bottles (ideally, these could be saved from a litter pick but should be washed and reused for future investigations)
  - water (to fill the bottles about half way)
  - uncoloured effervescent tablets, such as Alka Seltzer
  - 2 thermometers or data logger heat probes
  - Cork (with a hole in) or modelling clay to seal the bottle with the thermometer in
  - A warm day or a heat lamp!
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- Fill the bottles half full with water.
  - Drops about 4 effervescent tablets into the water in one of the bottles, ensuring that there is plenty of fizz!
  - Record the starting temperatures on the thermometers
  - Put the stoppers and thermometers in the necks of the bottles, making sure that the thermometers are measuring the air temperature in the bottle and they are not touching the water.
  - Leave in a warm, sunny position or by a heat lamp (not too close so the bottles don't melt!) for about an hour or long enough to see a temperature difference. You might need to leave it longer if using the warmth of sunlight.
  - Record the final temperature of the gases in the bottle and compare.

You can also see this investigation on a video at:

<https://www.youtube.com/watch?v=kwtt51gvaJQ>

### **Discuss and research**

This investigation could be a great starting point for discussion and research:

- Where does carbon dioxide come from in the atmosphere?
- How could we reduce carbon emissions?
- What could the effects be of an increase in global temperature on a range of habitats?

### **Next steps**

- Support children to write explanations of how the global warming occurs and the factors that can increase it
- Create a poster to raise awareness of the dangers of increasing global temperature.
- Decide on personal actions that the children/ school will take to help reduce carbon emissions.