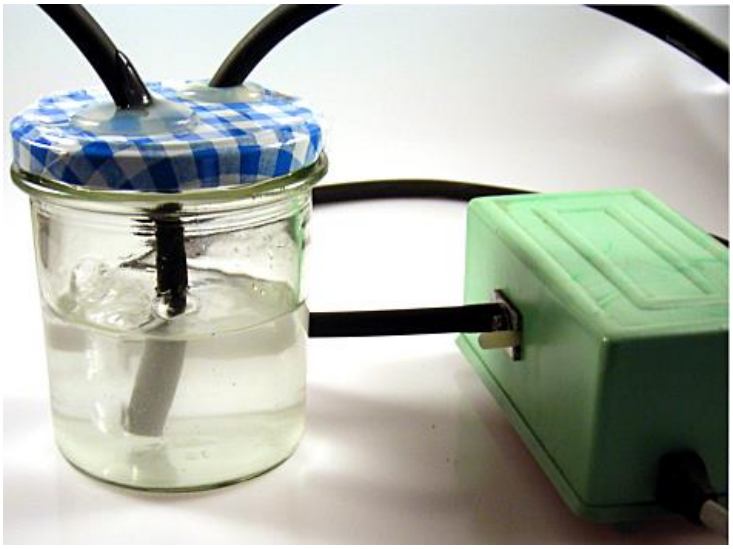
Carbon dioxide in the breath and in the classroom

1 Apparatus and materials

- 1 bottle containing calcium hydroxide solution
- 1 washing cylinder or 1 jam jar
- Tubes
- 1 pump
- 1 pair of safety goggles



A home-made washing cylinder made from a jam jar, tube and hot-melt adhesive is suitable both for blowing through and for measuring the ambient air with the aquarium pump.

2 Safety information

The materials may be used only as instructed by your teacher or as described in the experimentation instructions.
Work only under the instruction and supervision of your teacher. Calcium hydroxide and its solution are corrosive. Wear safety goggles.
In the event of contact with skin: Wash the skin thoroughly with soap and water.
In the event of contact with eyes: Rinse the eyes continuously with water for several minutes. If you wear contact lenses, remove them and then continue to rinse your eyes.
Seek medical advice and/or get medical attention.

3 Conducting the experiment

- Half fill the washing cylinder with calcium hydroxide solution.
- Blow through the immersed tube into the washing cylinder.
  (**Do not suck! This liquid causes chemical burning!)**
- Note what happens.
- Connect the pump to the washing cylinder.
  Make sure you have the right connection: Suck air out of the cylinder, not liquid!
  Start the pump. There will initially be some precipitation, but this will disappear again.

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4 Observation

Write down a summary of your observations.

5 Questions

- What is the stoichiometric reaction equation for the formation of the precipitation of carbon dioxide and calcium hydroxide?
- Why does the precipitation disappear again when there is a surplus of carbon dioxide? (Note: Whether the re-dissolving visibly occurs depends on the initial concentration of the calcium hydroxide.)
  Set out the stoichiometric reaction equation for this.
  What type of reaction is this?
- What is the overall stoichiometric equation for the combustion of sugar in the human body?
- What is the stoichiometric reaction equation for the combustion of octane?

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