GREENHOUSE EFFECT

Study on the impact of the presence of greenhouse gases from combustion on the greenhouse effect and an increase in the temperature of the atmosphere.

Materials:

- two identical thermometers (may be ordinary liquid thermometers) with a graduation of up to 50 °C (or with an even more extent as far as possible)
- two large glass jars with the widest possible caps
- fireplace matches
- headlight with a bulb with a power of at least 100W (200W recommended, you can't use a led bulb)

Before the lesson:

- At the bottom of both jars in a symmetrical way, in the middle, with the help of adhesive tape, place the thermometers in the same way as in the drawings (it is important that the scale of the thermometer is turned outside the jar).
- Close one of the jars, light a few fireplace matches at the same time, wait until they light up and ignite, throw carefully into a second, unscrewed jar so that they do not damage the thermometer. Wait for the flame to stabilize and close the jar with matches in the agents, which are extinguished emitting exhaust fumes.
- Then secure the jars for the next lesson (e.g. the next week or the next day) by placing them in a cupboard or other place that will provide the same thermal conditions for both dishes to equalize the temperatures in both dishes.

Description of the experiment:

- Place two jars next to each other, with the thermometer facing the observer. Behind the jars on the lift, we set a lamp with a 200Watt bulb. Remember that both jars should be symmetrically aligned and that the lamp illuminates them equally.
- The distance between the bulb and the jars should be 12-15 cm. During the experience, it is worthwhile to It should be noted that the light of a traditional incandescent bulb is similar to that of a solar bulb and therefore we can use a traditional light bulb (i.e. it cannot be an LED lamp or an energy-saving fluorescent lamp) for the purposes of the experiment.

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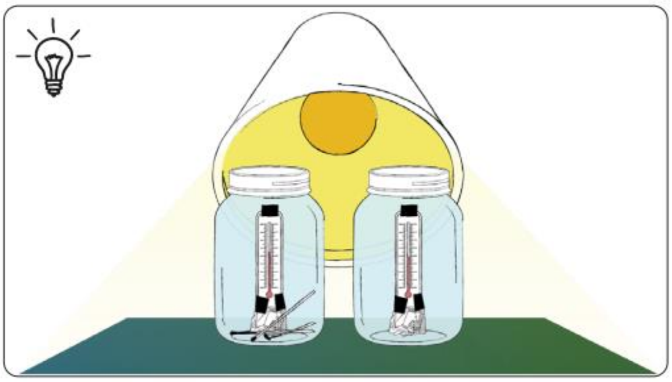
Schema of the experiment:

a) **Preparation of the experiment**

b) **Making the experiment**



After about 15 minutes, the temperature in both vessels rises and you should be able to observable difference of 1-2 °C, i.e. with a higher temperature in the jar with flue gases.

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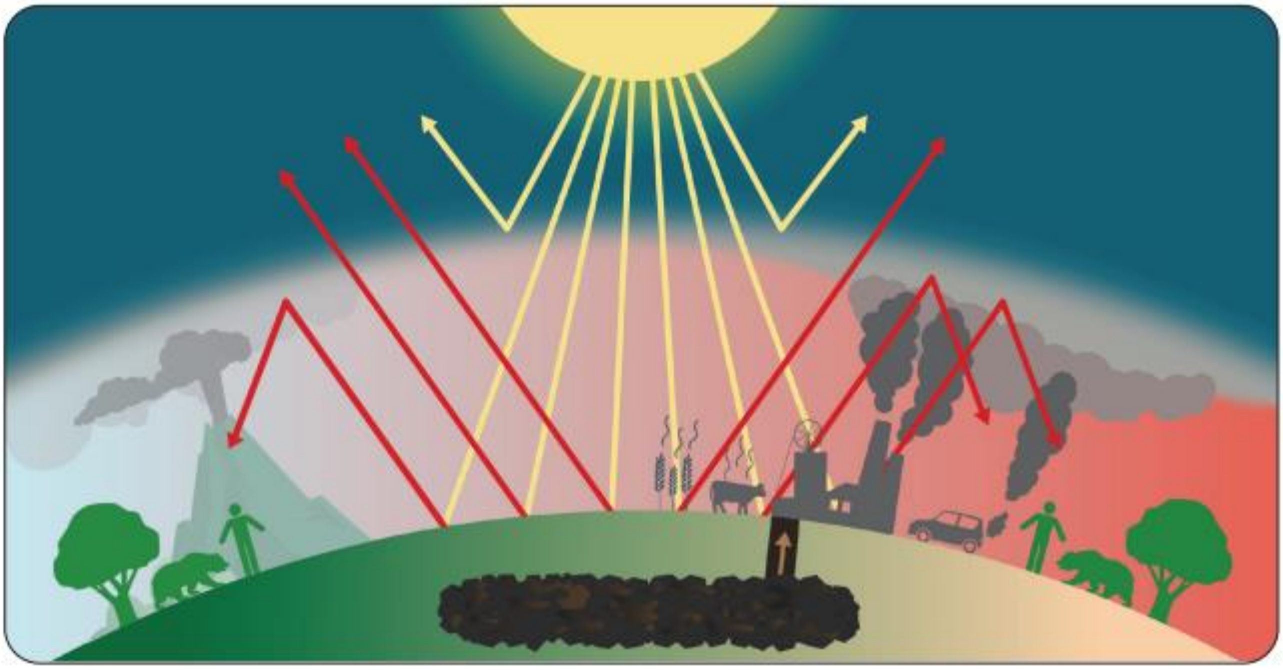
Observations:

- In the first minutes, the temperature rises equally fast in both vessels, the lecturer points out the similarity of the glass layer of the vessels to the atmosphere, which stops the escape of heat into space, which is the cause of the natural occurrence of the greenhouse effect and by increasing the temperature enables life on our planet.

Applications:

- After several minutes of the experiment, we quote the analogy of matches for burning fossil fuels and point out that the temperature difference is related to the presence of exhaust gases in one of the vessels.

- To explain the impact of the greenhouse effect and the reasons for its amplification, we show an illustration of the greenhouse effect, explaining that the source of increased greenhouse gas emissions, in particular CO_2, is primarily industrial human activity, related to the burning of fossil fuels, transport, agricultural production and land use change.



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