

KK CLIMATE ACTION GLOBAL UNDERSTANDING

TASK #1

Task:

In this task, you will complete an experiment that demonstrates global warming.

Success Criteria:

- Set up equipment carefully
- Complete experiment
- Explain your understanding of the experiment

Experiment 1 - The Greenhouse Effect 1

Equipment

- 2 equal sized containers (eg glass jars or beakers)
- 2 thermometers
- Something to cover one of the jars/beakers (eg aluminium foil)
- A light source (eg a lamp or direct sunlight)
- Optional: Stop watch or timer

Steps

1. Place a thermometer into each of the containers.
2. Cover one of the containers with the foil.
3. Expose containers to light sources (in the sun or under a lamp). Make sure they are positioned evenly in the source of light.
4. At regular intervals (eg 5-20 mins) check and record the temperature changes occurring in both containers.

Experiment 2 - The Greenhouse Effect 2

Equipment

- 2 equal sized containers with lids (eg glass jars)
- 2 thermometers
- Plastic wrap
- Water
- Ice cubes
- A light source (eg a lamp or direct sunlight)
- Optional: Stop watch or timer

Steps

1. Fill the containers with water.
2. Place an equal amount of ice cubes into each container.
3. Replace the caps onto each container.
4. Wrap one of the jars with several layers of the plastic wrap.
5. Expose containers to light sources (in the sun or under a lamp). Make sure they are positioned evenly in the source of light.
6. After 1 hour check and record the temperature changes occurring in both containers.

Experiment 3 - Gases

Equipment

- A partner
- 5 equal sized containers (eg glass jars or beakers)
- Thermometer (non contact preferable, however, standard glass in possible)
- Plastic wrap
- White vinegar
- Baking Soda (tip: do **not** use baking powder, the chemical compounds are not the same)
- Measuring cups and spoons
- Elastic bands
- Masking tape and marker (for labelling the containers)
- A light source (eg a lamp or direct sunlight)
- Optional: Stop watch or timer

Steps

1. Prepare the containers by labelling them using the following names:

Air (control)
Vinegar (control)
Baking Soda (control)
CO₂ (covered)
CO₂ (uncovered)

2. Cut the plastic wrap so that it is large enough to cover the opening of the containers, with some around the edge. Repeat 4 times.
3. Place plastic wrap on the container labelled *Air* and secure it with an elastic.
4. Place 1/4 cup of vinegar into the container labelled *Vinegar*, then cover with plastic wrap and secure with an elastic.
5. Place 1 tablespoon of baking soda into the container labelled *Baking Soda*, then cover with plastic wrap and secure with an elastic.
Note: For this next part, make sure you both act quickly so that, when the reaction starts, the container is quickly covered with the plastic wrap and secured to ensure the gases stay trapped inside. To do this, allocate one partner to be ready with the wrap and bands and the other partner adds the baking soda and vinegar.
6. Place 1/4 cup of vinegar into the container labelled *CO₂ (covered)*. Then, add 1 tablespoon of baking soda into the same container and **quickly**, cover with plastic wrap and secure with an elastic.
7. Expose the containers to light sources (in the sun or under a lamp). Make sure they are positioned evenly in the source of light.
8. While you are waiting for your 4 containers to heat, place 1/4 cup of vinegar into the container labelled *CO₂ (uncovered)*. Then, add 1 tablespoon of baking soda into the same container. Do **not** cover this container. After approx. 30 secs, record the temperature.
9. After 5-10 mins, check and record the temperature changes that have occurred in the 4 heated containers.
Note: If you are using a standard glass thermometer, make a tiny hole in the plastic wrap at the top of each container, without letting too much of the air escape. You can secure the thermometer with masking tape while you wait for the reading. Wait one minute, then remove the thermometer and record the results.