

Greenhouse Effect and Global Warming Worksheet

Data Tables

Part I. Greenhouse Effect

All temperatures in degrees C

Time (min)	Open	Clear Bottle	Bottle with Construction Paper
0			
5			
10			
15			
20			

Procedure

Part I. Greenhouse Effect

1. Obtain two plastic soda bottles and caps, a sheet of black construction paper, scissors, clear tape, a ruler, three plastic-backed thermometers, three 6" pieces of string, a support stand and a light source or lamp.
2. Tie a 6" piece of string to the hole at the top of one of the thermometers.
3. Repeat step 2 with two additional 6" pieces of string and two more thermometers.
4. Cut a 6" x 6" piece of black construction paper to fit over one-half of the outside surface of one of the bottles.
5. Tape the black construction paper on the outside of one of the bottles (see Figure 1).

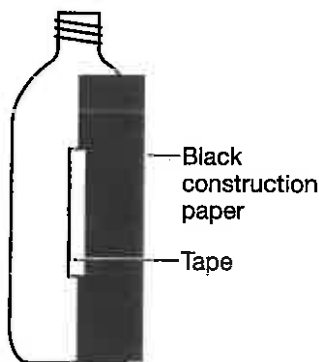


Figure 1. Black Construction Paper on Bottle

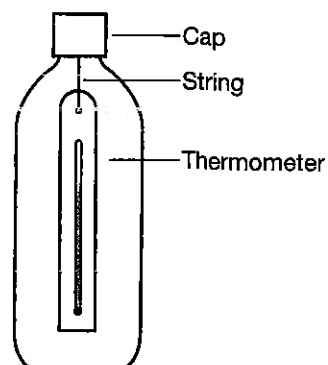


Figure 2. Thermometer in Bottle

6. Place a thermometer inside the neck of one of the bottles. Allow the string to hang over the neck of the bottle and screw on the cap. The thermometer should be suspended in the bottle (see Figure 2).
7. Repeat step 6 using another thermometer and a second plastic bottle.

Post-Lab Questions

1. Compare and contrast the temperature results obtained for the different thermometer setups in Part I.
2. Define the greenhouse effect and global warming. Describe how they are related.
3. How do the temperature results observed for the different bottles in Part I relate to the greenhouse effect?
4. What additional experiments could be performed using the basic setup in Part I to further investigate the greenhouse effect?
5. Which indicator sample(s) in Part II revealed the presence of carbonic acid after the balloon gases were bubbled through them?
6. Compare the number of drops of NaOH required to return to the original control color for each solution. What do these results mean?
7. Which balloon sample contained the largest amount of CO₂? Which contained the least?
8. Describe possible sources of experimental error that may affect the results for Part II.
9. Name a few ways to decrease the amount of greenhouse gas that is released into the atmosphere.