

PRELIMINARY ACTIVITY FOR

Investigating Indoor Carbon Dioxide Concentrations

Carbon dioxide is a colorless and odorless gas. It has many important uses. It is the fizz in soft drinks, beer, and sparkling wines. Carbon dioxide is released by baking powder or yeast to make cake batter rise. It is used in some fire extinguishers. Dry ice is solid carbon dioxide. Carbon dioxide is a product in cellular respiration and a reactant in photosynthesis.

But too much of a good thing, like carbon dioxide, can be bad. Carbon dioxide concentration is a surrogate for indoor pollutants that can cause drowsiness, headaches, and lower activity levels. CO₂ levels less than 600 ppm are desirable, and levels greater than 1000 ppm are generally considered indicative of inadequate ventilation. Levels of 2,500 ppm or greater can cause headaches. Unfortunately, studies indicate that many classrooms have peak CO₂ levels in excess of 2,500 ppm.

In the Preliminary Activity, you will gain experience using a CO₂ Gas Sensor while monitoring the carbon dioxide concentration in the classroom.

After completing the Preliminary Activity, you will first use reference sources to find out more about carbon dioxide before you then choose and investigate a researchable question dealing with indoor carbon dioxide. Some topics to consider in your reference search are:

- the carbon cycle
- photosynthesis
- cellular respiration
- indoor air pollution

PROCEDURE

1. Connect the CO₂ Gas Sensor and the data-collection interface.
2. Set the data-collection program up to collect data for 180 seconds following your teacher's instructions.
3. Wait 90 seconds for the sensor to warm up and start data collection.
4. After data are collected, use the linear regression function to determine the rate of change in carbon dioxide concentration.



QUESTIONS

1. Did the carbon dioxide concentration in the classroom change as you monitored it during the Preliminary Activity? Why did it change (or not change)?

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2. What is the role of carbon dioxide in photosynthesis? What is its role in cellular respiration?

3. Why does the carbon dioxide concentration in an occupied classroom change during a class period?

4. What are some possible consequences of elevated carbon dioxide concentration in a room?

5. List at least one researchable question for this experiment.