



MAKING A MODEL OF THE CARBON CYCLE THROUGH COMBUSTION AND PHOTOSYNTHESIS

In this experiment, you will model how carbon dioxide (CO_2) is released during combustion and how plants use CO_2 during photosynthesis.



QUESTION

How is carbon dioxide released and used in the carbon cycle?



HYPOTHESIS

If carbon dioxide is produced by combustion, then plants will use that carbon dioxide during photosynthesis.



MATERIALS

- 2 clear jars or large bottles with lids
- 2 small candles (tea lights work well)
- Matches or lighter (for adult use)
- 2 small potted plants or sprigs of Elodea (aquatic plant)
- Baking soda (sodium bicarbonate)
- Vinegar
- 2 small cups
- Water
- (Optional) Thermometer or timer

Note: Adult supervision is required for using fire.



SAFETY

- Always have an adult help with fire.
- Keep flammable items away from the candles.
- Do not touch the jars while candles are lit.
- Make sure the area is well-ventilated.



OBSERVATIONS

What you observed	Jar 1 (Combustion)	Jar 2 (Photosynthesis)
What happened to the candle?		
Did you see any changes in the plant or bubbles?		
How did the amount of gas in the jar seem to change?		
Other observations		



PROCEDURE

1. Set up Jar 1 (Combustion):
 - Place a small candle in the bottom of the first jar.
 - Light the candle (adult only), then quickly place the lid on the jar.
2. Set up Jar 2 (Photosynthesis):
 - Put a small plant or sprig of Elodea in the second jar.
 - In a cup, mix 1 tablespoon of baking soda with 1/2 cup of vinegar.
 - Quickly pour the mixture into the jar (behind the plant) and put the lid on.
 - The reaction will release carbon dioxide (CO_2).
3. Place both jars in a location with bright light (sunlight or grow light).
4. Observe for 30–60 minutes.

JAR 1: COMBUSTION



The candle burns and releases carbon dioxide (CO_2).

JAR 2: PHOTOSYNTHESIS



The plant uses the carbon dioxide (CO_2) to make food and release oxygen.



CONCLUSION

1. What did you learn about how carbon dioxide is produced in the carbon cycle?

2. How do plants help to keep the carbon cycle balanced?



THINK FURTHER

How would the carbon cycle be affected if there were no plants?
How would it be affected if humans stopped burning fossil fuels?

THE CARBON CYCLE IN ACTION

