

Name: _____

Class: _____

Date: _____

The Problem with CO₂ is...



Goal:

We all exhale CO₂. In fact, we are all exhaling CO₂ right now! So then how can it be considered “pollution?” In this lab you will investigate air from five different sources: indoor air, outdoor air, car exhaust, human breath, and air from a burning candle. Your goal is to measure the CO₂ content in each. The problem with CO₂ is...

Materials:

- | | | | | |
|------------------------------|-------------------|------------------|----------------------------|------------|
| - calcium hydroxide solution | - plastic syringe | - 5 petri dishes | - a beaker | - a candle |
| - air from the 5 sources | - 2 balloons | - a straw | - small graduated cylinder | - matches |

Procedure:

- Eventually, you will need to obtain air from each of the five sources:
 - Take a plastic syringe and add a straw to the end. Fill syringe with 70ml of classroom air.
 - Take a plastic syringe (with straw) and fill it with 70ml of air from outside or by a window.
 - Take a balloon out to a car. Let the car run for about a minute. Cover the exhaust pipe with the balloon until it is full (use a funnel if needed).
 - Take a clean balloon and blow into it for 5-10 seconds or until full.
 - Use a match to light a small candle. Cover the candle with an upside-down beaker. After the candle goes out, slide the beaker to the edge of the table. Without letting the air escape, insert your syringe/straw to suck out some of the air; once again, you need 70ml.
- Take a small sample of limewater (10 ml) and put it in a small graduated cylinder.
- Insert air-filled syringe (straw attached) into the water. Make sure straw goes all the way to the bottom.
- Squirt the air through the straw slowly, letting it bubble to the surface.
- After you have blown 70ml of air (two full syringes) through the straw, dump the liquid into one of your petri dishes. Record any changes in appearance in your data table. Specifically, you are looking for calcium carbonate (chalk) that formed within the liquid, which would indicate the presence of CO₂ in the air.
- Repeat steps 2-5 with the four other sources of air, using a consistent volume of air for each test.

Data:

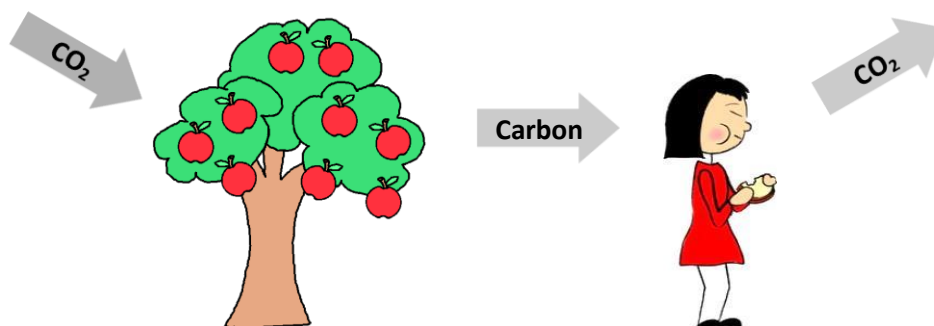
Source of Air	Observations After Test	Rank Most CO ₂ Content

Post-Lab Conclusions:

1. Calcium hydroxide reacts with CO_2 according to the equation below. Which of the products were you able to see as evidence of the reaction?

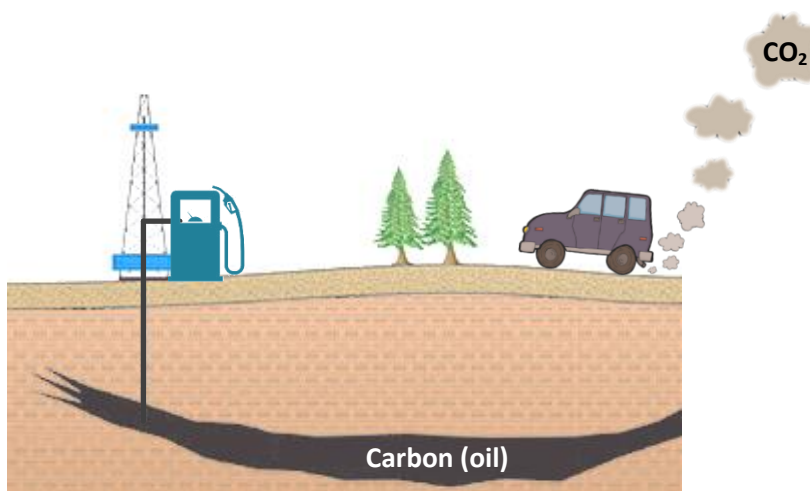


2. Which two of the five sources contained the most CO_2 ?
3. Even though human breath contains CO_2 it is not a problem for the environment. Why? Where does human-ingested carbon come from?



4. Which of the five sources presents the greatest problem for the environment? Why?

5. Where does the carbon in car exhaust come from?



6. The problem with CO_2 is...