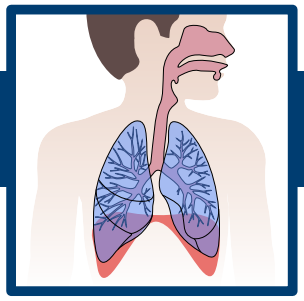
LESSON 3: RESPIRATORY EXPLORATORY



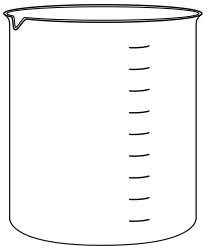
Exploratory Laboratory 3C: *Exchange It!*

In this lab, you will consider the problem: how do we know when oxygen is exchanged for carbon dioxide? Carbon dioxide is a waste product formed when gluose ($C_6H_{12}O_6$) is broken down by cells to release energy.

You will create two solutions with an indicator (bromothymol blue) to help determine oxygen and carbon dioxide levels.

Materials:

- 2 200 ml beakers
- 100 ml water (bottled, tap, or distilled water will work)
- 100 ml carbonated water (contains dissolved carbon dioxide)
- 50 ml bromothymol blue indicator
- 50 ml graduated cylinder
- Goggles
- Gloves (recommended, not required)
- Stirring rod
- Colored pencils
- 1 drinking straw
- Timer (cell phone timer will work)

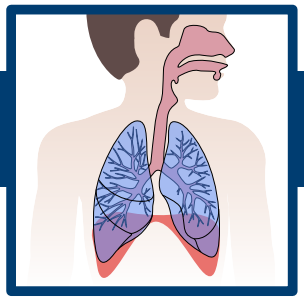


Safety:

Bromothymol blue must be handled with care! It is a mild irritant to eyes, skin, gastrointestinal tract, and respiratory system. Goggles are a must and gloves are recommended.

Procedure:

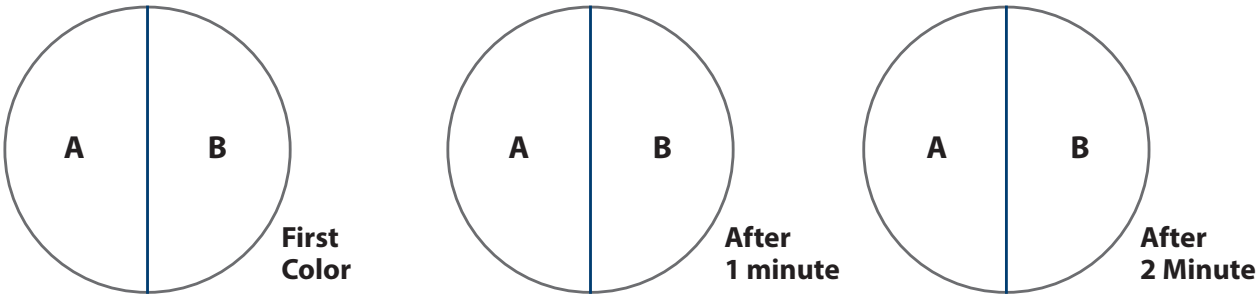
1. Put on goggles (and gloves)!
2. Label beakers: A and B.
3. Put water in Beaker A.
4. Put carbonated water in Beaker B.
5. Use the graduated cylinder to measure out 25 ml of bromothymol blue and add to Beaker A.
6. Stir and record the color.
7. Use the graduated cylinder to measure out 25 ml of bromothymol blue and add to Beaker B.
8. Stir and record the color.
   NOTE: If using the same rod to stir both beakers, wipe the rod clean between use to avoid cross-contamination of the experiment.
9. After 1 minute, record any color changes in each beaker.



Exploratory Laboratory 3C: *Exchange It!*

1. After 2 minutes, record any color changes in each beaker.
2. Place the straw in Beaker A (without carbonated water). Gently blow through the straw into the solution in Beaker A. Record observations.
   ***NOTE*:** Do not blow too hard or else the bromothymol blue will make a mess!

Observations:



Write observations here: