

Plants and CO₂

Objective

This exercise should show the students that plants use CO₂ in the presence of light.

<p align="center">Materials</p> <p>Available from Region 20 Living Science Materials Center</p>	<p align="center">Enrichment Activity</p>
<p>LM-61 Elodea</p>	<p>Pre-Class Preparation</p> <ol style="list-style-type: none"> 1. Fill test tube with water and put elodea plant in each before class starts. Place these test tubes in the light about 1 hour before class. Check your Bromthymol blue solution to see that it is blue in color (blue at about pH 7.5). If it is yellow, add one drop of ammonium hydroxide. <p>Procedure</p> <ol style="list-style-type: none"> 1. Set the four test tubes that have water and a sprig of elodea in each test tube rack. 2. Remove the Elodea plant from two of the test tubes. 3. Add ten drops of the bromthymol blue indicator to each test tube. The water in each of the test tubes should turn blue, if it does not, add one drop of ammonium hydroxide to each test tube. 4. Using a straw gently blow air through each test tube until its solution turns yellow. Put a cork in the test tubes with elodea and in one of the others. Leave one test tube without a cork. 5. Wrap one of the elodea tubes with aluminum foil. 6. Place the test tube in the sunlight or under a strong artificial light for 30 to 45 minutes. 7. Remove the aluminum foil from the covered test tube. <p>Questions</p> <ol style="list-style-type: none"> 1. What color was the water in each of the four test tubes? 2. When you bubbled your breath through the water with Bromthymol blue, it turned yellow – what caused it to turn yellow? (If you have dry ice, take a test tube with some Bromthymol blue in it and drop a pea-sized piece of dry ice in it. What happened? 3. See if you can explain what has happened in each of your test tubes. <p>Extension</p> <p>You might place a potted plant and an open beaker of water with Bromthymol blue in a polyethelene bag and seal it up to see if plants that do not live in water give off CO₂.</p> <p>What would happen if you placed Bromthymol blue and a sprig of elodea in a test tube and placed it in the sunlight? What would happen in this test tube if you covered it with aluminum foil for 24 hours? Why?</p>
<p>Not Available from Region 20 Living Science Materials Center</p>	
<p>Aluminum Foil (to wrap 1 test tube) 4 test tubes and stoppers Dry Ice (Not necessary, but experiment is more effective with it) Bromthymol blue solution Dilute ammonium solution</p>	