



Bottled Model Lungs

<p>THE BASICS</p>	<p>THE TOOLBOX</p>	<p>EDUCATION STANDARDS</p>	<p>Life Science Content Standard: Understanding characteristics of organisms and how the human respiratory system functions.</p>
<p> Grade Level: K-9</p>	<ul style="list-style-type: none"> • Clear 2-liter plastic soda bottle • Scissors or knife • Y-tubes • String • Pair of latex gloves • Rubber band 	<p>SAFETY CONCERNS</p>	<p>The instructor should cut off the bottom of the soda bottle—especially for younger students.</p>
<p> Estimated Time: 30 min.</p>		<p>FOR KIDS WITH DISABILITIES</p>	<p>Visually-impaired students may need to be paired with students who can describe the visual results of the experiment.</p>



Educational Objective:
To demonstrate how the lungs function. To state the function of the lungs. To locate the lungs in the body.

What to Do:

- Copy the activity sheets.
- For younger children, you will want to cut off the bottom of the soda bottles for them and punch the hole in the bottle cap.
- To find Y-tubes, consult the list of vendors located in the Appendix of this book.

Questions to Ask Students As They Do This Activity:

- What happens when you push up on the latex bottom of the bottle?
- What happens when you pull down on the latex bottom of the bottle?
- What have you created?
- What does this model show? Explain.
- Can you name the organs of the body in the order in which air moves through them?

Why It Happens:

When you breathe, your **diaphragm** contracts and expands. When you inhale, your diaphragm contracts to make room for your lungs, which fill up with air the way balloons do when you blow them up. The model demonstrates this action when you pull down on its latex bottom. When you exhale, your diaphragm expands, forcing the air out of your lungs. You can see this action using your model when you push up on its latex bottom. The muscles of the rib cage, which protect the lungs, are also used in **respiration**, allowing the lungs to fill up with air.

The main purpose of respiration is the intake of air, which contains **oxygen**, an element vital to our survival, and the removal of the waste product **carbon dioxide**.

WEB SITES

- **National Heart, Lung & Blood Institute**
<http://www.nhlbi.nih.gov/index.htm> (Grades 6-12)
- **Asthma**
<http://www.people.virginia.edu/~smb4v/tutorials/asthma/asthma1.html> (Grades 3-8)

SOFTWARE

- **Magic School Bus Explores the Human Body**
Microsoft Corporation, 1995.
(Grades 1-5)
- **Body Works**
The Learning Company, 1997.
(Grades 6-12)

READING ROOM

- Time-Life. **Human Body**. Time-Life, 1999. (Grades 3-8)
- Friedman, Meyer and Gerald Friedland. **Medicine's Ten Greatest Discoveries**. Yale University Press, 1998. (Grades 9 and up.)
- Parker, Steve. **The Lungs and Respiratory System**. Raintree Steck-Vaughn, 1997. (Grades 5-12)

Career Connections

Doctors can specialize in the field of respiratory medicine. This area focuses primarily on the lungs and other organs that support breathing, and on the diseases that affect this system, such as asthma, emphysema, and cancer.

BOTTLED MODEL LUNGS ACTIVITY SHEET

1. Cut two fingers off the glove. These will represent the lungs.
2. Tie the fingers to the ends of the Y-tube.
3. Cut the bottom off the soda bottle.
4. Ask your leader to punch a hole in the bottle cap.
5. Place the Y-tube with the fingers attached into the bottle through the bottom.
6. Place the cap on the bottle so that the Y-tube sticks through it out of the top of the bottle.
7. Cut a circle from the palm of the glove.
8. Stretch the circle over the bottom of the bottle and secure it with a rubber band.
9. Push up and pull down on the latex on the bottom of the bottle. What happens? Record your observations.

