

# Exercise 2A

## The Respiratory System

This exercise gives an overview of the respiratory system. The goal is to relate this to the effects pollution has on how people breathe. For more background, see The Human Body Experience at the Life Sciences Connection website.

***This is the respiratory system. Without this system, you couldn't breathe! Here's how it works...***

Although it may seem easier to breathe through the mouth, it is healthier to breathe through the nose. The hairs and mucus in the nose (part of the *nasal cavity*) help filter and warm the air as it comes in.

The **epiglottis** is a small flap of tissue above the trachea that prevents food from entering the trachea and lungs.

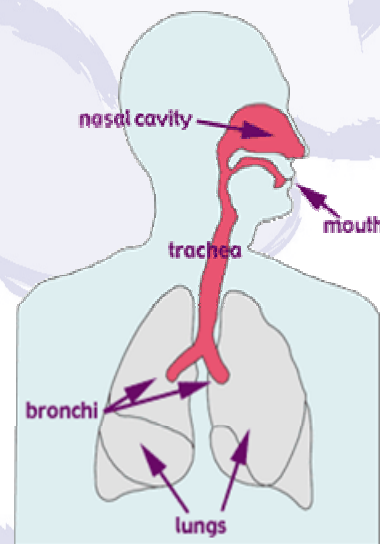
At the lower end of the trachea are two short branches called **bronchi**, that carry air into the lungs.

Within the lungs, the bronchi branch into smaller and smaller tubes called **bronchioles**.

At the end of each bronchiole are clusters of tiny, thin-walled sacs called **alveoli**.

The exchange of oxygen and carbon dioxide takes place between the alveoli and the surrounding capillaries.

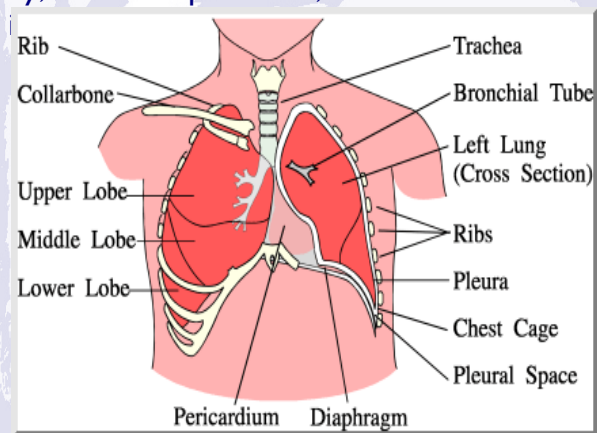
The **diaphragm** is a muscle beneath the lungs that helps move air in and out of the body.




# Exercise 2A


## The Air Bags

Related to Exercise 2A, this exercise allows students to become aware of their breathing patterns. Relate this exercise to how pollutants enter their airways and irritate them. Point out that oxygen breathed in is carried in the blood to all parts of the body, and some pollutants, such as carbon monoxide, replace the oxygen available for the body.



### SCIENCE FACTFILE

 **BREATH IN**--your body gets oxygen from the air. Rib muscles contract to pull ribs up and out. The **DIAPHRAGM** muscle contracts to pull down the lungs. Tissue expands to suck in air.

 **BREATH OUT**-- you get rid of other gases that your body does not need. Rib muscles relax. The **Diaphragm** muscle relaxes. Tissue returns to resting position and forces air out.

# Exercise 2A

## WHAT IS AIR?

## HOW DO LIVING THINGS USE IT?

### OVERVIEW

Helping students understand how air is used by the body is very helpful in teaching them to appreciate the virtues of clean air. Subjects include math and science.

### PROCEDURE

1. After students are finished creating their pictures of the basic respiratory tract, have the class count the number of times they breathe per minute. Does each student breathe at the same rate? What would change their breathing rates? Can they figure out how many times they breathe in one day?

2. Share the following information with the students:

Oxygen is inhaled through the nose and mouth. It enters the lungs and is transported to other organs through the blood. Once used, leftover air, or waste air, moves back to the lungs so that it can be exhaled through the mouth.

### Target Grade Level

3rd-5th

### TIME

One class period.

### OBJECTIVES

After participating in or observing the lesson, students will be able to:

- explain how the body uses air,
- identify at least three of the body's major organs and explain how pollution interferes with air delivery throughout the body.

### MATERIALS

- student-made pictures of bones, liver, heart, lungs, mouth,
- thirty to forty colored ping-pong balls in two colors; one representing clean air, one representing pollution.

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From: Pathfinders for Kids — The Respiratory System  
[http://infozone.imcpl.org/kids\\_resp.htm](http://infozone.imcpl.org/kids_resp.htm)

## LINKING ACTIVITY WITH OZONE ALERT!

1. What happens when the air has things in it that aren't good for us?
2. How does the quality of our air affect our health and our lives?
3. What are some simple actions students can take that can help clean the air?

