



Be a Scientist!

Design an experiment to investigate how much air it takes to do a certain task. Use straws with different diameters. Blow through a straw and try to push an object—such as a cotton ball, feather, or ping-pong ball—a certain distance. Record the time it takes to move an object using each straw. (Note: Do not share straws with other students or use objects that are small enough to be inhaled through the straw.)

Which straw was the most difficult to push air through? How did the amount of space air could pass through affect how much work you could do? Compare your results to the respiratory systems of people who do and do not have asthma.



Beyond the Book

Search the library or the Internet to find out about other famous people with asthma and how they live with it.

FOCUS Book

Asthma



• Science A-Z 

Notes



Asthma



FOCUS Question

What is asthma, and why do some people have it?

Cause and Effect

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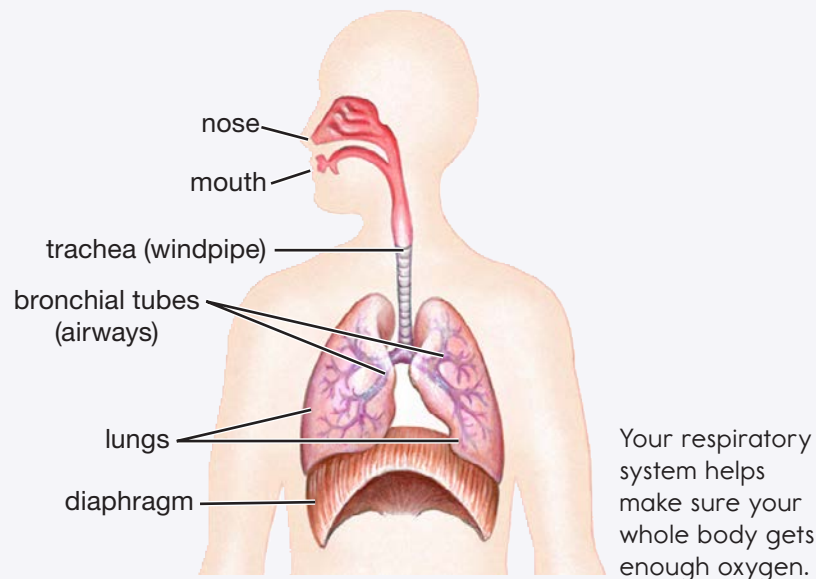
We Need to Breathe

Breathe in. You are bringing air into your body through your nose and mouth. The air travels down your windpipe to your lungs. A gas in the air called oxygen passes from your lungs into your blood. Your body uses this oxygen to produce energy.

Breathe out. You are pushing air out of your lungs. Now you can breathe in new air again. *Aaaaah!*

When your body works hard, you need more oxygen. Your breaths get faster and deeper. Each breath brings more oxygen to your lungs and blood.

THE RESPIRATORY SYSTEM





Read-Think-Write

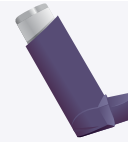
Write your answers on separate paper. Use details from the text as evidence.

- 1 Which body system brings oxygen into the body?
- 2 Why can't a person catch asthma from someone else?
- 3 How are having asthma and having allergies different but related?
- 4 What are two examples from the book that might trigger an asthma attack?
- 5 Suppose your friend has asthma and will be going on a vacation soon. What advice would you give to help your friend avoid asthma problems? Use details from the book.



FOCUS Question

What is asthma, and why do some people have it? First, briefly explain how the respiratory system works. Then explain what happens to it during an asthma attack.

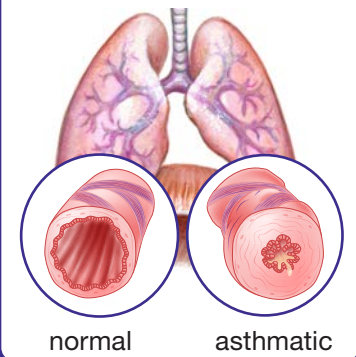


What Is Asthma?

Your airways, or *bronchial tubes*, are the passageways that carry air to your lungs. *Asthma* (AZ-muh) is a physical condition that affects a person's airways. It causes the tubes to swell.

The tissue lining the tubes becomes thick and filled with mucus. The airways become narrow. Less air can get into the lungs with each breath. Imagine trying to breathe through a thin straw instead of a wide paper towel tube.

A NORMAL AND AN ASTHMATIC AIRWAY



During asthma attacks, people can't get enough air to their lungs. They may wheeze or cough and feel pain in their chest. Most attacks go away by themselves. But sometimes people have to use medicine or go to the hospital to get help breathing.



This girl is having trouble breathing during an asthma attack.

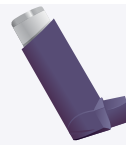
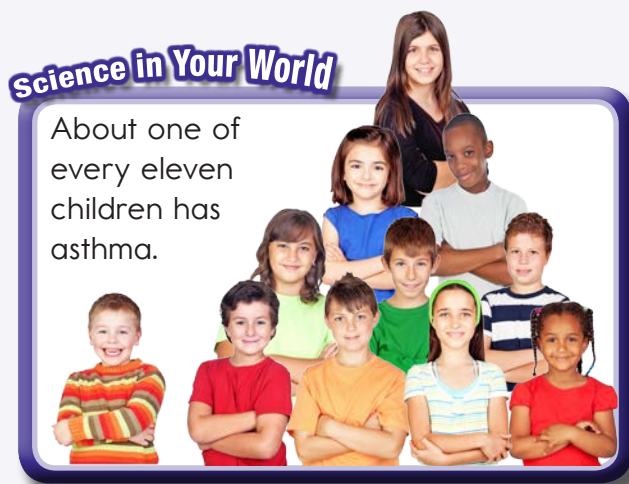


Can I Catch Asthma?

What can you do to keep from getting asthma?
Wash your hands? Use a tissue? No.

You can't catch asthma from someone who has asthma. It is not spread by germs like a cold. Most people with asthma have had it since birth. They are born with sensitive airways. Their parents often have sensitive airways, too.

Children of any age can develop asthma symptoms. Sometimes the symptoms go away as children grow up. Other people get asthma as adults. People who smoke or breathe in a lot of polluted air are more likely to get asthma.



These people all have asthma. They also all won Olympic gold medals!

People with asthma can do most things other people do. Even some Olympic champions have asthma. They learn to manage their symptoms by taking their medicine. They also learn to avoid triggers that cause asthma attacks.

If you have asthma, learn to avoid triggers and manage your symptoms. Then you can breathe easier!

Tips to Avoid an Asthma Attack

- Stay away from things that cause your allergy symptoms.
- Don't use products with strong smells.
- Warm up before exercise to gradually open your airways.
- Avoid exercising on cold days or wear a mask to help warm the air.
- Stay inside when there is a lot of air pollution outside.
- Keep the air inside your home clean.



Living with Asthma

There is no cure for asthma. But a doctor can help people with asthma control the symptoms. Doctors do tests to find out each person's triggers. They prescribe medicines that relieve symptoms over time.

What do you do if someone needs help fast? The person can't breathe! Doctors can prescribe an *inhaler*. The inhaler has medicine that works quickly to open up the airways.

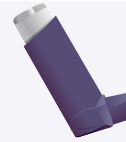
A person uses an inhaler by putting the open end in his or her mouth.

A button on top releases a spray of medicine. The person slowly breathes the spray in through the mouth. The medicine quickly goes to the small airways in the lungs to keep them from swelling.

The medicine inside an inhaler sprays out in a mist.



An inhaler can quickly relieve asthma symptoms.



Allergies and Asthma



An allergy to flower pollen can cause sneezing and may trigger an asthma attack.

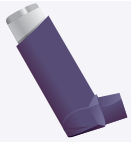
Ah-choo! Do cats make you sneeze? Do peanuts make you itch? You may have an *allergy*. People with an allergy can become sick when they eat, breathe, or touch something, even if it is usually harmless to other people.

Allergies can also cause asthma attacks. Many things can cause asthma symptoms to occur or get worse. These things are called *triggers*. An allergy can be a trigger for some people.

Do You Know?

Many people are allergic to dust mites, which live in mattresses, rugs, and furniture. Vacuuming, doing laundry, and replacing old pillows can help people with asthma.

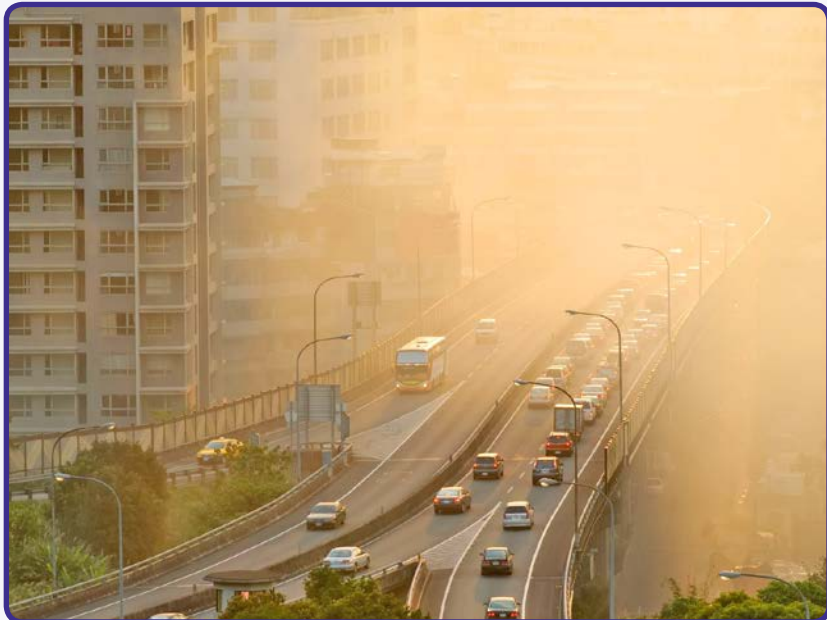




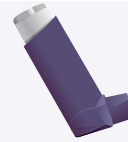
That's Irritating

When you breathe in air, you also breathe in dust, smoke, and odors. Do you use candles? Air fresheners? Perfume? Strong smells can irritate the airways and are often triggers for asthma. So is smoke from fireplaces and cigarettes.

Outside, you breathe in polluted air from cars and factories. People with asthma should avoid things that irritate their airways. Strong smells and dirty air can be triggers for asthma attacks.



Waste gases from cars and trucks cause air pollution that can trigger an asthma attack.



Huffing and Puffing

Everyone needs exercise. But for people with asthma, exercise can trigger an asthma attack. You need more oxygen when you exercise. So, you breathe harder and faster. Breathing more air means more particles that can irritate the airways.



During exercise, you often breathe through your mouth to get more air. But the air does not have time to get warm and moist as it does inside your nose. This cold, dry air can irritate the airways and cause an asthma attack.

People with asthma can still exercise safely. Exercising when the air is warmer helps keep the airways from swelling. Warming up before exercise also helps airways open slowly.