



The Asthma Story

Scenario One: It was a hot summer day and the soccer team was practicing hard. The weatherman had predicted that it was going to be an Ozone Action Day with high levels of ozone expected. In the middle of the afternoon, one of the players started coughing and wheezing, making a whistling sound. The player was having a terrible time breathing! The team was really concerned and they did not know what was happening! The coach knew, however. It was an asthma attack! He quickly got the player's inhaler, and soon the crisis was over.

Scenario Two: It was a cold winter day and Julie was visiting a friend at a hospital. She noticed her neighbor was sitting in the waiting room looking worried. The neighbor said that her three-year-old son, who has asthma, was in an oxygen tent at the hospital because he could barely breathe. She wondered why this would happen when he had been doing so well all winter—he had even been playing outdoors in the snow. Julie thought she knew why. The Midwest was in the middle of a particle pollution episode. Levels were higher than they had been in years. The weather conditions caused an inversion in the atmosphere, and many more particles than usual were trapped in the air people breathe. Lots of wood-burning stoves and heavy vehicle traffic made things worse.

These stories are based on true events. Although we cannot prove what triggered these specific health problems, the message is clear—air pollution can affect people's health, especially those with asthma. Asthma attacks can last minutes or days and can become dangerous if the airflow becomes severely restricted.

What Is Asthma?

Asthma (az-muh) is a chronic disease of the lungs. There are mild and serious forms of asthma. If you have asthma, you may have a bad cough, wheezing, a tight feeling in the chest, and trouble breathing. Asthma cannot be cured, but it can usually be controlled.

In an asthma attack, the airways (or **bronchial tubes**) in the lungs react to some stimulus or trigger. The airways become inflamed and swollen and they make more mucus than usual. Muscles around the airways in the lungs tighten or constrict. This makes the airways narrow, making it difficult to breathe. The swollen airways can produce extra mucus, which adds to the problem. In between asthma attacks, breathing can be normal.

Try breathing through a narrow straw or a coffee stirrer. That is how asthma can feel.

Who Gets Asthma?

Lots of people—even athletes like former NBA basketball star Denis Rodman, football player Jerome Bettis, and Olympic champion Jackie Joyner-Kersey—have asthma. In fact, in 2009, it was estimated that 25 million people in the United States had asthma, including 7 million children. The prevalence of asthma in Michigan has been steadily increasing over the past 10 years and it is greater than the national average.



Asthma is the leading cause of school absences due to chronic illness, a number that has more than doubled in the past 20 years. Look around the room—there are probably several people in your class who have asthma. Figure 1 is the result of surveys of high school students in Michigan.

What Can Trigger an Asthma Attack?

Allergens such as dust, mold, pet dander, and pollen can cause asthma to flare up. Things that irritate the lining of the lungs, such as perfume, chalk dust, cigarette smoke, and particle pollution, can also aggravate asthma. In some people, exercise causes an asthma attack.

People may have trouble with one or more of these triggers. Everyone is different. Think about it: the player in Scenario One was exercising hard on a day with high ozone levels and the child in Scenario Two had been playing outdoors during a particle pollution episode. There were different triggers for each problem.

How Is Asthma Treated?

Asthma treatment includes avoiding asthma triggers and using asthma medicines. If a person reacts strongly to certain triggers, he/she should do everything possible to avoid them. This can reduce the need for medicine to control the asthma.

Two kinds of medicines are often used for asthma—those used to relieve acute symptoms and those used on a long-term basis to control asthma. Fast-acting, inhaled **bronchodilators** are used to help open up airways to allow air to move more freely. Anti-inflammatory medicines, such as **corticosteroids**, are used every day on a long-term basis to help reduce the swelling of airways. These may be sprays (inhalers) or pills.

The good news is that as a person grows older, the airways grow wider and this might reduce the asthma problem. But remember that asthma is just one of the health problems associated with air pollution.

Figure 1.

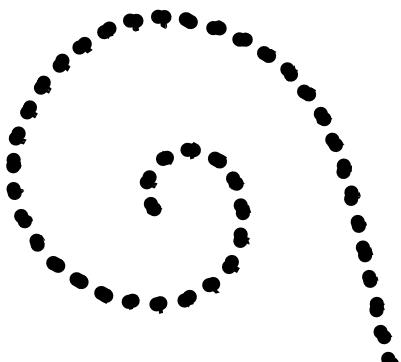
Percentage of high school students who had asthma in Michigan

Group	Ever Had Asthma, 2003	Ever Had Asthma, 2009
All Students	21.1%	23.3%
Females	19.0%	23.2%
Males	23.0%	23.4%

Sources:

Michigan Department of Education. (2004). *Michigan Youth Risk Behavior Survey, 2003*. Retrieved June 20, 2005, from <http://www.emc.cmich.edu/YRBS/>.

National Center for Chronic Disease Prevention and Health Promotion. (2011). *Youth Risk Behavior Surveillance – United States 2009*. Retrieved May 19, 2011, from <http://www.cdc.gov/healthyyouth/yrbs/>.



Name _____



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1. Is asthma a problem in Michigan? How do you know?

2. What types of air pollutants might make a person's asthma worse? Why?

Look at the *Is There a Connection Between Air Pollution and Asthma?* maps of Michigan given (or shown) to you by your teacher.

3. Where in Michigan are the highest levels of hospitalizations for children due to asthma?

4. What areas of Michigan have the greatest amounts of air emissions and what do they have in common?

5. Is there a relationship between the amount of pollutants in certain areas and the number of children hospitalized for asthma in those areas? Explain your answer.

