

Asthma and Air Pollution

Natural Resources Defense Council

Bad air can bring on asthma attacks, even in healthy people; tracking air quality and controlling pollution from cars, factories and power plants can help.

Far too many Americans -- about 20 million people -- are intimately acquainted with the symptoms of an asthma attack. When asthma strikes, your airways become constricted and swollen, filling with mucus. Your chest feels tight -- you may cough or wheeze -- and you just can't seem to catch your breath. In severe cases, asthma attacks can be deadly. They kill 5,000 people every year in the United States.

Asthma is a chronic, sometimes debilitating condition that has no cure. It keeps kids out of school (for a total of 14 million lost school days each year, according to the Centers for Disease Control) and sidelines them from physical activity. Employers lose 12 million work days every year when asthma keeps adults out of the workplace. The disease is also responsible for nearly 2 million emergency-room visits a year.

Understanding what might trigger an asthma attack helps asthma sufferers keep their disease in check. Sometimes it's as simple as avoiding dust, tobacco smoke or cockroach droppings. But what if the air outside your home is filled with asthma triggers?

In recent years, scientists have shown that air pollution from cars, factories and power plants is a major cause of asthma attacks. And more than 159 million Americans -- over half the nation's population -- live in areas with bad air. A research study published in 2002 estimated that 30 percent of childhood asthma is due to environmental exposures, costing the nation \$2 billion per year. And studies also suggest that air pollution may contribute to the development of asthma in previously healthy people.

Air Pollutants that Trigger Asthma

- **Ground Level Ozone:** A toxic component of smog, ozone triggers asthma attacks and makes existing asthma worse. It may also lead to the development of asthma in children. Ozone is produced at ground level when tailpipe pollution from cars and trucks reacts with oxygen and sunlight. Ground level ozone is a big problem in cities with lots of traffic, such as Los Angeles, Houston and New York City. In 2004, according to the American Lung Association, 136 million people lived in areas that violated ozone air quality standards.
- **Sulfur Dioxide (SO₂):** A respiratory irritant associated with the onset of asthma attacks, sulfur dioxide is produced when coal and crude oil are burned. Coal-fired power plants, particularly older plants that burn coal without SO₂ pollution controls, are the worst SO₂ polluters. One in five Americans lives within 10 miles of a coal-fired power plant. Oil refineries and diesel engines that burn high-sulfur fuel also release large amounts of SO₂ into the air.
- **Particulate Matter:** This term refers to a wide range of pollutants -- dust, soot, fly ash, diesel exhaust particles, wood smoke and sulfate aerosols -- which are suspended as tiny particles in the air. Some of these fine particles can become lodged in the lungs and could trigger asthma attacks. Studies have shown that the number of hospitalizations for asthma increases when levels of particulate matter in the air rise. Coal-fired power plants, factories and diesel vehicles are major sources of particulate pollution. Around 81 million people live in areas that fail to meet national air quality standards for particulate matter.
- **Nitrogen oxide (NO_x):** A gas emitted from tailpipes and power plants, nitrogen oxide contributes to the formation of ground-level ozone and smog. It also reacts with other air pollutants to form small particles that can cause breathing difficulties, especially in people with asthma.

Watching Out for Bad Air Days

If you have asthma, your doctor can help you design a plan to control and prevent asthma attacks. Limiting your exposure to air pollution can be an important part of that plan. The EPA keeps tabs on local air quality across the country through its daily Air Quality Index, which measures levels of five major air pollutants.

EPA's Air Quality Index

Air Quality Index (AQI) Values	Levels of Health Concern	Colors
When the AQI is in this range:	...air quality conditions are:	...as symbolized by this color:
0 to 50	Good	Green
51 to 100	Moderate	Yellow
151 to 200	Unhealthy for Sensitive Groups	Orange
201 to 300	Unhealthy	Red
301 to 500	Very Unhealthy	Purple
	Hazardous	Maroon

Check the EPA website or your local television, newspaper or radio weather reports for daily updates on air quality. On bad air days, signified by orange and red colors on the index, children and people with respiratory diseases should limit their time outdoors. Purple and maroon indicate extreme levels of pollution -- even healthy adults should try to stay inside.

Time to Clear the Air

Although air quality has improved in many areas of the country over the past 15 years, air pollution still poses a health risk for millions of Americans. Adopting stricter national air quality standards for particulate matter and ozone would help clear the air by giving states a stronger tool to force polluters to clean up; it would also encourage industry to switch to cleaner fuels as an alternative to dirty diesel-diesel exhaust has been linked to asthma as well as cancer. Requiring coal-fired power plants that operate without SO₂ controls to install scrubbers to curb their emissions would also help reduce health risks for asthma sufferers and people who live near these polluting facilities. And putting more clean-running, fuel-efficient cars and trucks on the road can cut down on emissions of NO_x and other chemicals that contribute to ozone formation.