



## OF AIR AND ASTHMA

### *Air Pollution's Effects*

A growing number of Americans are sniffing and suffering with allergies and asthma. Several studies have shown that air pollution and indoor allergens make asthma symptoms worse and can bring on an asthma attack. If you're one of the millions of Americans who suffer from asthma, you might get some relief by taking steps to reduce indoor allergen levels and modifying your lifestyle to avoid the ill effects of air pollution.

Asthma is caused by swelling and inflammation of your airways. When the airways narrow, less air gets through to your lungs, causing wheezing, coughing, chest tightness and trouble breathing.

Children with a family history of allergies and asthma are more likely to have asthma. Exposure to triggers in the environment, including allergens, pollutants and viral infections, also play a role. "The rapid increase in asthma cases from the late 1970s cannot be attributed to genetics alone," says Dr. Peter Gergen, medical officer at NIH's National Institute of Allergy and Infectious Diseases. "Changes in the environment, home surroundings

and exposure to infections have also contributed to the prevalence of asthma."

Understanding what makes asthma worse can help asthma sufferers keep their disease in check. NIH research has shown that children who live in inner cities are exposed to higher levels of allergens from dust mites, dogs, cats, rodents, cockroaches and mold in their homes. A recent study found that people with asthma

**"Changes in the environment, home surroundings and exposure to infections have also contributed to the prevalence of asthma."**

and allergies may be able to alleviate asthma symptoms by reducing allergen levels in their homes.

“Some simple measures—washing bedding in hot water, vacuuming and steam-cleaning, and using high-efficiency particulate air purifiers (HEPA) and mattress and pillow covers that do not allow allergens to pass through—can decrease the levels of household allergens,” Gergen says.

But what if the air outside your home is filled with asthma triggers? A study conducted by the Environmental Protection Agency (EPA) showed that even modestly increased levels of air pollution cause more frequent asthma symptoms and lower lung function in children who have persistent asthma and live in inner city areas of the United States. Even air pollution levels within EPA’s safety standards made asthma worse in vulnerable children.

High levels of nitrogen dioxide, a component of motor vehicle emissions, had the greatest effect in the study, leading to many asthma-related school absences. Past research has also shown that ozone and particle pollution can affect asthma. Ozone, which is found in smog, is worse on hot days, especially in the afternoons and early evenings. Particle pollution, found in smoke and dust, is bad near busy roads and factories or when there’s smoke in the air.

Researchers are studying different approaches to prevent and treat asthma. Asthma can’t be cured, but most people with asthma can control it and live active lives. Talk to your doctor about developing a plan to manage your asthma symptoms.



Air Quality Index (AQI) Values	Levels of Health Concern	Colors
<i>When the AQI is in this range:</i>	<i>...air quality conditions are:</i>	<i>...as symbolized by this color:</i>
0 to 50	Good	Green
51 to 100	Moderate	Yellow
101 to 150	Unhealthy for Sensitive Groups	Orange
151 to 200	Unhealthy	Red
201 to 300	Very Unhealthy	Purple
301 to 500	Hazardous	Maroon

## ASTHMA AND THE OUTDOORS

If you have asthma:

- Avoid outdoor activities in the afternoons on warmer days, when the risk of air pollution is highest.
- Avoid strenuous outdoor activities if the air is polluted. Check your region’s air quality index, which is often reported in the local news. Orange and red mean it’s a bad air day and that children and adults with respiratory diseases should avoid the outdoors. Purple and maroon mean air pollution is extreme and everyone should try to stay inside.