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Outdoor Air Pollution and Your Health

Outdoor air pollution consists of a mixture of particles and gases that can affect the health of children and adults. Everyone is exposed to pollution when breathing the outdoor air. Certain groups of people, including children and adults with lung diseases such as asthma and chronic obstructive pulmonary disease (COPD) are at higher risk of experiencing health problems from outdoor air pollution.



Where Does Outdoor Air Pollution Come From?

Air pollution is the name for the mixture of harmful particles and gases in the air around us that we breathe. Air pollution is produced by both human activity and naturally occurring events. Burning of fossil fuels by motor vehicles (including cars, buses and trucks) and power plants (including coal-fired and natural gas plants) releases a mixture of pollutants, such as tiny particles (particulate matter, PM), nitrogen oxides (NOx) and volatile organic compounds (VOCs). Chemical reactions in the atmosphere between NOx and VOCs produce ground-level ozone, a component of smog. Naturally-occurring sources of pollutants include forest fires, volcanoes, and dust storms. Forest fires release a range of pollutants, from particulate matter and acrolein (a respiratory irritant) to carcinogens (causing cancer) such as formaldehyde and benzene. Dust particles from roads or desert environments also pollute the air. Tiny airborne particles from power plant emissions or forest burning can travel thousands of miles and affect the air quality in distant places. In general, pollution levels are highest closest to the source of emission.

Is Outdoor Air Pollution Bad for my Health?

Studies have found that higher levels of outdoor air pollution are linked to a number of health effects,

including:

- worse lung function
- cough, mucous production, shortness of breath, and wheeze
- asthma attacks
- doctor visits for respiratory infection in young children
- hospitalization for pneumonia in infants and the elderly
- hospitalization for chronic obstructive pulmonary disease (COPD)
- heart attacks
- stroke
- respiratory, cardiovascular and all-cause mortality (death rates)

Whether or not you are at risk for any of these health effects depends on your general health and the level of air pollution where you live.

Who is Most Vulnerable to Health Effects of Air Pollution?

A number of groups are at higher risk of experiencing certain health effects of outdoor air pollution. These include:

- Infants and young children
- Children and adults with lung diseases including

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asthma and chronic obstructive pulmonary disease (COPD)

- Adults with heart disease
- Elderly adults

How Can I Find Out About Air Quality in My Neighborhood?

Air quality has been improving in United States for the past several decades and this has lowered the health risks of breathing the outdoor air. However, studies have found that there continue to be health risks, particularly for those living close to major roadways, power plants and other sources of air pollution. The following resources allow you to look up the air quality in your neighborhood:

| Air Quality Resources | Description |
|--|---|
| Airnow.gov (Environmental Protection Agency) | Color-coded air quality index system. The higher the index value, the greater the health concern. For people with lung disease, an air quality color index of yellow may be unhealthy. |
| www.stateoftheair.org (American Lung Association) | Annual air quality "report card" for each U.S. county for two widespread types of pollution—ozone (smog) and particle pollution ($PM_{2.5}$, also known as soot). The report grades counties and ranks cities and counties based on pollution levels. |
| www.healthoftheair.org (American Thoracic Society; NYU Marron Institute) | Provides city- and county-level estimates of excess human illness and death due to $PM_{2.5}$ and ozone levels above EPA standards and ATS-recommended standards. |

What Can I Do to Reduce My Risk of Air Pollution Health Effects?

- Stay indoors on polluted days (you can use the air quality index as a guide)
- Keep windows closed and use air conditioning on hot, smoggy days
- Exercise often, but minimize exercise along busy roadways

- Eat a healthy diet that contains fresh fruits and vegetables
- Avoid indoor sources of air pollution, such as woodstoves and open fireplaces
- Use your asthma and heart medications as directed to treat any symptoms on polluted days
- Be aware of the health effects of air pollution. If all of us reduced our energy consumption a little bit, we would make a difference.

While the health risks of air pollution exposure can be serious, it is also important to exercise and enjoy the outdoors. Talk to your healthcare provider about whether air pollution is a particular health concern for you.

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Rx Action Steps

- ✓ Find out how to get air quality alerts. If you or a loved one has lung disease or higher risk of problems from exposure to air pollution, stay indoors when there are AQI air quality alerts
- ✓ Talk to your child's school about staying indoors on days with AQI alert days.
- ✓ Support efforts to control air pollution in your community

Additional Resources:

American Thoracic Society
www.thoracic.org/patients

American Lung Association
<http://www.lung.org>

World Health Organization—Air Pollution and Health
http://www.who.int/phe/health_topics/outdoorair/en/

Environmental Protection Agency
www.epa.gov

Centers for Disease Control and Prevention
<http://www.cdc.gov/air>

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