

Outdoor Air Pollution and Your Health

Outdoor air pollution is a mixture of tiny particles and gases that affect the health of children and adults. Everyone is exposed to some pollution when they breathe. Certain groups of people, including children and adults with lung diseases such as asthma and chronic obstructive pulmonary disease (COPD), newborn infants and the elderly are at higher risk of having 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 we breathe. Air pollution is produced by both human activity and naturally occurring events. Burning 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 disasters such as volcanoes, airborne allergens such as pollen and molds, wildfires, and dust storms. Wildfires release a range of pollutants, from PMs and acrolein (a respiratory irritant) to carcinogens (cancer-causing substances) such as formaldehyde and benzene. Dust particles blowing up from roads or deserts also pollute the air. In general, air pollution levels are highest closest to the source that made them. Tiny airborne particles from power plant emissions or forest fires can travel thousands of miles and affect the air quality in distant places.

Is Outdoor Air Pollution Bad for my Health?

Air pollution can affect health in both the short and long term. In the short term, high levels of air pollution such as wildfire smoke can cause serious acute health problems including asthma attacks, COPD exacerbations, heart attacks. In the long term, levels of air pollution may be lower but can still cause serious chronic health problems including lung disease. These lower levels of pollution affect everyone but may only be noticed by people who

already have underlying conditions, such as lung or heart disease. In the United States (US), the Environmental Protection Agency (EPA) sets short- and long-term air quality standards to protect public health, including sensitive populations such as children, the elderly, and those with asthma or COPD). While there is no safe level of air pollution, making laws that lower the accepted levels of air pollutants could help reduce people needing to be in the hospital and deaths due to poor air quality.

Studies show that higher levels of outdoor air pollution are linked to health effects, including:

- Worse lung function including decreased lung growth in children
- Cough, mucus production, shortness of breath, throat irritation, and runny nose
- Asthma attacks and COPD exacerbations, including emergency visits and hospital stays
- Premature birth, low birth weight and birth defects
- Clinic and emergency visits and hospitalization for respiratory problems in infants, young children and the elderly
- Heart attacks and strokes
- Death from all causes, including respiratory and heart problems

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?

Some people are at higher risk of having negative health effects of outdoor air pollution:

- Infants, young children, and elderly adults
- Children and adults with lung diseases such as

asthma and COPD

- Adults with heart disease

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

Air quality has been improving in US for the past several decades. This has lowered the number of people who have health problems from breathing outdoor air. However, health risks continue to be a problem, 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 area:

Air Quality Resources	Description
Airnow.gov (Environmental Protection Agency)	Color-coded air quality index. 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 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.
EPA Smoke Sense App	Explore forecasts of air quality, learn about how to protect from wildfire smoke, and help collect anonymous crowdsourced data about wildfires

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

- Stay indoors on days with poor air quality (you can use the air quality index as a guide)
- Keep windows closed and use air conditioning on hot, smoggy days
- Avoid indoor sources of air pollution, such as cigarette smoking and use of woodstoves and open fireplaces
- On poor air quality days, shut off devices that bring outdoor air into the house, such as evaporative coolers or fresh-air ventilation systems
- Use of a High Efficiency Particulate Air (HEPA) filter in the bedroom may help reduce respiratory symptoms related to air pollution. Do not use ozone generators.
- Take your asthma and heart medications and follow your action plans as directed

- 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 how serious a health risk air pollution is for you.
 - ◆ Exercise often, but try to avoid exercise along busy roadways, near other sources of air pollution, or on poor air quality days.

Action Steps:

- ✓ Download an air quality app that will give local air quality information, such as the US EPA’s AirNow Mobile app
- ✓ Stay indoors when there are air quality alerts, particularly if you are at higher risk.
- ✓ Talk to your child’s school about staying indoors on air quality alert days.
- ✓ Support efforts to control air pollution in your community such as promoting walking and cycling infrastructure for physically active transportation, traffic-free zones and no-idle zones near schools, businesses and industrial areas.

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Resources:

American Thoracic Society

- www.thoracic.org/patients
 - Indoor air quality problems
 - Wildfires disaster guidance

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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