



An official website of the United States government.



We've made some changes to [EPA.gov](https://www.epa.gov). If the information you are looking for is not here, you may be able to find it on the [EPA Web Archive](#) or the [January 19, 2017 Web Snapshot](#).

[Close](#) ×



Wood Smoke and Your Health

On this page:

- [What is wood smoke?](#)
- [Health effects of wood smoke](#)
- [Who is at risk from wood smoke?](#)
- [Environmental effects](#)

What is wood smoke?

Carbon Monoxide Detectors

Smoke from wood that is not burned completely contains a number of chemicals, including carbon monoxide (CO).

More than 150 people die annually from CO poisoning related to the use of home heating appliances.

CO is odorless and colorless. If you use a wood stove or fireplace, install a digital CO detector, which sounds an alarm when CO levels increase.

[Learn more](#)

Smoke forms when wood or other organic matter burns. The smoke from wood burning is made up of a complex mixture of gases and fine particles (also called particle pollution, particulate matter, or PM). In addition to particle pollution, wood smoke contains several toxic harmful air pollutants including:

- benzene,
- formaldehyde,
- acrolein, and
- polycyclic aromatic hydrocarbons (PAHs).

The more efficiently you burn wood (e.g., using an EPA-certified wood stove and dry, seasoned wood) the less smoke is created.

Health effects of wood smoke



Click on image to
enlarge

Smoke may smell good, but it's not good for you. The biggest health threat from smoke is from fine particles, also called fine particulate matter or PM2.5. These microscopic particles can get into your eyes and respiratory system, where they may cause burning eyes, runny nose, and illnesses, such as bronchitis.

Fine particles can make asthma symptoms worse and trigger asthma attacks. Fine particles can also trigger heart attacks, stroke, irregular heart rhythms, and heart failure, especially in people who are already at risk for these conditions.

Learn more about the [health and environmental effects of fine particles](#).

Who is at risk from wood smoke?

Smoke Detectors

Each year, about 3,000 people die in residential fires in the U.S. – mainly from smoke inhalation. A properly installed and maintained smoke alarm is one of the best and cheapest ways to be warned early of a potentially deadly fire.

Wood smoke can affect everyone, but the populations known to be at greater risk include: children, teenagers, older adults, people with lung disease -- including asthma and COPD, people with heart disease, outdoor workers, and people of low socioeconomic status, including those who are homeless and with limited access to medical care. Research indicates that obesity or diabetes may also increase risk. New or expectant mothers may also want to take precautions to protect the health of their babies, because some studies indicate they may be at increased risk.

It's important to limit your exposure to smoke—especially if you are more susceptible than others:

- If you have heart or lung disease, such as congestive heart failure, angina, chronic obstructive pulmonary disease, emphysema or asthma, you may experience

Related Information

Components of wood smoke

- [Particle pollution](#)
- [Benzene](#)
- [Formaldehyde](#)
- [Acrolein](#)
- [PAHs](#)

Health resources

- [How smoke from fires can affect your health](#)
- [How wood smoke harms your health](#) EXIT

Asthma resources

- [EPA Asthma website](#)
- [CDC Asthma website](#)
- [NoAttacks.org](#) EXIT

Outreach materials

- [Burn Wise Awareness Kit](#)
- [Wood Smoke and Asthma Videos](#)

health effects earlier and at lower smoke levels than healthy people.

- Older adults are more likely to be affected by smoke, possibly because they are more likely to have chronic heart or lung diseases than younger people.
- Children also are more susceptible to smoke for several reasons:
 - their respiratory systems are still developing,
 - they breathe more air (and air pollution) per pound of body weight than adults, and
 - they are more likely to be active outdoors.

[Learn how to reduce wood smoke and lower your risk.](#)

Environmental effects of wood smoke

The particles in wood smoke can [reduce visibility \(haze\)](#). Particles can also create environmental and aesthetic damage in our communities and scenic areas – like national parks.

LAST UPDATED ON SEPTEMBER 17, 2020