

Frequently asked questions about wildfire smoke and public health

Wildfire smoke

Q: Why is wildfire smoke bad for my health?

A: Wildfire smoke is a mixture of gases and fine particles from burning trees and other plant material. The gases and fine particles can be dangerous if inhaled. In wildfires, carbon monoxide is mainly a risk to people (like firefighters) who work near smoldering areas. Smoke can irritate your eyes and your respiratory system, and worsen chronic heart and lung diseases. The amount and length of smoke exposure, as well as a person's age and degree of susceptibility, play a role in determining if someone will experience smoke-related health problems. If you are experiencing serious medical problems for any reason, seek medical attention immediately.



Q: Why is everyone talking about particulate matter?

A: The particulate matter (also called "PM") in wildfire smoke poses the biggest risk to the public's health. The potential health effects vary based on the type of plants burning, atmospheric conditions and, most importantly, the size of the particles. Particles larger than 10 micrometers usually irritate only the eyes, nose and throat. Fine particles 2.5 micrometers or smaller (PM2.5) can be inhaled into the deepest part of the lungs, and may cause greater health concern.

Health effects of wildfire smoke

Q: Who is most likely to have health effects from wildfire smoke exposure?

A: Smoke may worsen symptoms for people who have pre-existing health conditions and those who are particularly sensitive to air pollution. Sensitive groups include:

- Persons with asthma or other chronic respiratory disease
- Persons with cardiovascular disease
- Persons \geq 65 years of age
- Infants and children
- Pregnant woman
- Smokers, especially those who have smoked for several years

Q: *How can I tell if wildfire smoke is affecting me or my family?*

A: Wildfire smoke can cause the following:

- Watery or dry eyes
- Persistent cough, phlegm, wheeze, scratchy throat or irritated sinuses
- Headaches
- Shortness of breath, asthma attack or lung irritation
- Irregular heartbeat, chest pain or fatigue
- Nonfatal and fatal heart attacks

People with chronic heart disease or lung disease such as asthma and chronic obstructive pulmonary disease (COPD) may be more likely to have serious health effects from wildfire smoke.

Q: *What should I do if I am having a health problem from smoke?*

A: If you have a medical emergency from smoke, you should call 911 or go to the hospital emergency room immediately. Contact your healthcare provider for advice on how to prevent and treat symptoms from exposure to wildfire smoke.

Strategies to reduce smoke exposure

Q: *How can I protect myself and my family from the harmful effects of smoke?*

A: Limit your exposure to the smoke:

- Stay indoors whenever possible with the doors and windows closed.
- Reduce other sources of indoor air pollution such as smoke from tobacco, wood-burning stoves and burning candles.
- Use high-efficiency (HEPA) air-cleaning filters, if available.
- Avoid vacuuming, which can stir up dust.
- When driving in a vehicle, keep windows closed with air conditioning set to recirculate.
- Drink plenty of water to help reduce symptoms of scratchy throat and coughing.

Leaving the area of thick smoke may be best for those with health conditions that put them at higher risk for illness from wildfire smoke.

Q: *What can I do to deal with eye irritation from wildfire smoke?*

A: Wildfire smoke can cause burning, redness and tearing in the eyes. To relieve the symptoms, you can use over-the-counter artificial tear drops and drink enough water. Running a humidifier may also provide relief. Consult with a healthcare provider if symptoms last longer than several days. If you are in an area where there is a lot of ash or fine dust, consider wearing goggles.

Q: Should I wear a dust mask or N95 respirator?

A: N95 respirators are filter masks that fit over the nose and mouth. When properly fitted, an N95 respirator can filter 95% of smoke particles. However, N95 respirators do not filter toxic gases and vapors.

Most people will find it difficult to correctly use N95 respirators. It is important that the respirator fits properly and air does not leak around the sides. If it does not fit properly, the respirator will provide little if any protection, and may offer a false sense of security. Proper fit testing requires special equipment and training.

N95 respirators can make breathing more difficult and lead to increased breathing and heart rates. Respirator use by those with heart and respiratory diseases should only be done under a healthcare provider's supervision.

Even healthy adults may find that the increased effort required for breathing makes it uncomfortable to wear a respirator for long periods of time. Decisions on whether to use respirators or masks as personal protection should be made on a case-by-case, day-to-day basis.

Q: What is the difference between an N95 respirator and a dust mask?

A: N95 respirators are tested and certified by the National Institute for Occupational Safety and Health (NIOSH) for use in certain work places. N95 respirators are tested to ensure they filter at least 95% of airborne particles. If an employer requires an employee to wear a respirator, the employee must be trained and fitted to wear a NIOSH-approved respirator. Voluntary use of respirators by employees does not eliminate all employer responsibilities under Oregon OSHA regulations.

Dust masks and surgical masks that are not NIOSH certified are not tested for filtration effectiveness and may not offer a consistent level of protection from particles. This means that they may offer little protection.

Q: Will a wet towel or bandana provide any help?

A: Probably not. A wet towel or bandana may stop large particles, but not the fine, small ones that can get down into the lungs. They will likely provide little protection.

Q: What should I do about closing up my house when it is so hot in there?

A: Make sure you don't get overheated if you live without air conditioning and have the doors and windows closed. Consider visiting family members, neighbors or public buildings that have air conditioning and air filtration. Leaving the area of thick smoke may be best for those with health conditions that put them at higher risk for illness.

Q: I'll probably need to go out some time. Is there a time of day when smoke is less of a problem?

A: This varies depending on the fire and the conditions. Check the Department of Environmental Quality (DEQ) Air Quality Index. If there is an air quality monitor near you, the website can give you information about what time of day the smoke levels are lowest. The DEQ Air Quality Index can be found on the Oregon Smoke Blog: www.oregonSmoke.blogspot.com.



Q: What should I do if I must drive to work?

A: You can reduce smoke exposure by keeping the windows closed and using the air conditioner on the recirculate setting. This can reduce exposure to particles, but not to the toxic gases in wildfire smoke.

Q: Do air-purifying machines help remove smoke particles inside buildings?

A: Portable air cleaners with HEPA filters and/or electrostatic precipitators (ESP) can reduce indoor particle levels, but most are not effective at removing gases and odors. Air cleaners using ozone will not remove particles unless they also use HEPA filters and/or ESP technology. Also, humidifiers or dehumidifiers are not air cleaners and will not do much to reduce the amount of particles in the air during a smoke event.

Q: I operate a nonresidential building with outside air intakes. Should I close the outside air intakes during a wildfire smoke event?

A: Every nonresidential building has a uniquely designed ventilation system, and any changes, even temporary ones, can affect building occupants and indoor air quality. If your building is strictly an office environment, it may be wise to cut back or eliminate outside intake into the building during a wildfire smoke event. If the building has labs or special ventilation systems, it may not be wise to reduce outside air flow if ventilation is needed to prevent the build up of chemicals in the building. We recommend you consult with a heating, ventilation and air-conditioning professional or someone who knows your special ventilation needs for guidance on this issue.

More information

Q: Where can I find information about ongoing wildfires in Oregon?

A: The Oregon Smoke Blog has more information about wildfires in Oregon: www.oregonSmoke.blogspot.com.

Q: Where can I find information about air quality in my community?

A: Check the local air quality index (AQI) on the Oregon DEQ's website: www.deq.state.or.us/aqi/index.aspx.

Q: *Our community has an outdoor event scheduled for this evening. Should we cancel it?*

A. It depends on the level of smoke exposure. Check with your local health department.

Q: *How does wildfire smoke affect pets and livestock?*

A. The effects of smoke are similar for humans and animals. High levels of smoke may irritate your animal's eyes and respiratory tract. Strategies to reduce animals' exposure to smoke are also similar to those for humans: reduce the time spent in smoky areas, provide animals with plenty of water, limit activities that will increase breathing and reduce exposure to dust or other air pollutants. If your pet or livestock is coughing or having difficulty breathing, contact your veterinarian.

Q. *How can wildfires affect drinking water quality?*

A. Wildfires destroy plants that stabilize soil. By burning ground cover, fires also release chemicals such as nitrates and phosphates that affect water quality. Erosion and release of these chemicals into surface water can decrease the quality of drinking water. Nitrates and phosphates can also promote growth of harmful algae. Flame retardants used by firefighters may find a way to drinking water sources. Water suppliers can monitor the drinking water source upstream of the intake to determine if unhealthy chemicals are in the raw water. Public drinking water systems can take steps to protect drinking water quality by applying post-fire erosion control techniques in the watershed.



PUBLIC HEALTH DIVISION
Health Security, Preparedness and Response
Phone: 971-673-1315
Fax: 971-673-1309

OHA website: <http://public.health.oregon.gov/Preparedness/Prepare/Pages/PrepareForWildfire.aspx>

OHA Facebook: www.facebook.com/OregonHealthAuthority

OHA Twitter: www.twitter.com/OHAOregon

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