



# Protecting Workers from Wildfire Smoke



Wildfire smoke is a mixture of gases and fine particles from burning trees and other plant material that can be dangerous if inhaled. Smoke can irritate your eyes and 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, seek medical attention immediately.



### Protecting Indoor Workers

Wildfire smoke can be a hazard for workers in offices and other commercial buildings. The following steps can improve indoor air quality.

- Ensure the heating, ventilation and air conditioning (HVAC) system is working properly, and that air filters are clean and properly seated.
- Work with an HVAC technician to determine the highest filtration rating your HVAC system will support, and use the highest rating possible when smoke is present. Filters with high filtration ratings require more frequent change-outs, but this step can improve indoor air quality.
- Consult with a qualified HVAC technician or ventilation engineer before reducing building air intake to ensure air pressure remains slightly positive. If the air pressure becomes negative compared to the outdoors, pollution will infiltrate the building through the exhaust system and other openings.
- Portable high-efficiency HEPA air cleaners can improve air quality in small, defined spaces by removing fine particulates.

### Protecting Outdoor Workers

- When outdoor air quality is unhealthy, reduce contact time with wildfire smoke to minimize health risks. Workers may also be affected by high temperatures, and some workers may be more susceptible than others to poor air quality. Consider the following recommendations:
- Relocate work to less smoky areas.
- Reschedule work until air quality improves.
- Reduce the level or duration of physical exertion.
- Where feasible, provide enclosed structures with filtered air for employees to work in.
- Where feasible, provide enclosed vehicles.
- When air quality is poor, set the air conditioning to "recirculate" mode and keep vents and windows closed.

### The United States Particle Pollution – Air Quality Index (AQI) and Canadian Air Quality Health Index (AQHI)

Particle pollution comes from many sources. The U.S. Environmental Protection Agency (EPA) and Environment and Climate Change Canada have each developed air quality indexes, and both scales are used for determining potential health impacts of air pollution.

The U.S. AQI is calculated from air pollutant concentrations and uses a 0-500 scale. An AQI above 101 is considered unhealthy for sensitive groups, above 151 is considered unhealthy for all people and above 201 is considered very unhealthy. The index increases to hazardous levels above 301.

The Canadian AQHI is based on a scale of 1-10, with over 10 being considered unhealthy and a very high risk.

**Before employees are exposed to an AQI of 101+ or an AQHI of 10+:**

**1. Provide training that covers symptoms of wildfire smoke exposure.**

- Burning sensations, redness and tearing of the eyes caused by irritation and inflammation that can temporarily impair one’s vision
- Runny nose, sore throat, cough, difficulty breathing, sinus irritation, wheezing, shortness of breath
- Fatigue, headache, irregular heartbeat, chest pain
- People at higher risk of health problems include children, adults over 65 and pregnant people as well as those with pre-existing health conditions, cardiac or respiratory illnesses, diabetes or other medical conditions

**2. Communicate hazards.**

- Notify employees when the AQI or AQHI is at or above unhealthy concentration levels
- Notify employees when the AQI or AQHI drops below levels that require protective measures
- Encourage employees to inform the employer if any of the following occurs:
  - When air quality improves and worsens
  - When anyone experiences asthma attacks, difficulty breathing or chest pain, as these severe health symptoms may be the result of wildfire smoke exposure

**Personal Protective Equipment (PPE) – Respirators**

In some situations, the use of personal protective equipment such as respirators may be considered to limit a worker’s exposure. If the recommendations listed above cannot be implemented, a National Institute for Occupational Safety and Health (NIOSH) approved respirator may be needed to reduce the risks from airborne particulates in wildfire smoke. When respirators are used, the requirements of the OSHA respiratory Protection standard must be implemented.

To learn more about managing your risk and increasing efficiency, visit [cna.com/riskcontrol](https://cna.com/riskcontrol) (U.S.) or [cnacanada.ca](https://cnacanada.ca) (Canada).

**Air Quality Guide for Particle Pollution**

Harmful particle pollution is one of our nation’s most common air pollutants. Use the chart below to help reduce your exposure and protect your health. For your local air quality forecast, visit [www.airnow.gov](http://www.airnow.gov)

Air Quality Index	Who Needs to be Concerned?	What Should I Do?
Good (0-50)		It’s a great day to be active outside.
Moderate (51-100)	Some people who may be unusually sensitive to particle pollution.	<b>Unusually sensitive people:</b> Consider reducing prolonged or heavy exertion. Watch for symptoms such as coughing or shortness of breath. These are signs to take it easier. <b>Everyone else:</b> It’s a good day to be active outside.
Unhealthy for Sensitive Groups (101-150)	Sensitive groups include <b>people with heart or lung disease, older adults, children and teenagers.</b>	<b>Sensitive groups:</b> Reduce prolonged or heavy exertion. It’s OK to be active outside, but take more breaks and do less intense activities. Watch for symptoms such as coughing or shortness of breath. <b>People with asthma</b> should follow their asthma action plans and keep quick relief medicine handy. <b>If you have heart disease:</b> Symptoms such as palpitations, shortness of breath, or unusual fatigue may indicate a serious problem. If you have any of these, contact your health care provider.
Unhealthy (151-200)	<b>Everyone</b>	<b>Sensitive groups:</b> Avoid prolonged or heavy exertion. Consider moving activities indoors or rescheduling. <b>Everyone else:</b> Reduce prolonged or heavy exertion. Take more breaks during outdoor activities.
Very Unhealthy (201-300)	<b>Everyone</b>	<b>Sensitive groups:</b> Avoid all physical activity outdoors. Move activities indoors or reschedule to a time when air quality is better. <b>Everyone else:</b> Avoid prolonged or heavy exertion. Consider moving activities indoors or rescheduling to a time when air quality is better.

**Air Quality Health Index (AQHI) Scale**



**Resources**

- [Environment and Climate Change Canada](https://www.ec.gc.ca/ceqa)
- [U.S. EPA](https://www.epa.gov)
- [OSHA](https://www.osha-slc.gov)
- [State of Oregon Department of Environmental Quality](https://www2.gov.bc.ca/gov2/eng/ceqa)
- [CALOSHA](https://www.calosha.wa.gov)
- [WAlni](https://www.walini.com)

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