

Wildfire smoke

Frequently asked questions

At WorkSafeBC, we're dedicated to promoting safe and healthy workplaces across B.C. This publication provides responses to frequently asked questions (FAQs) from employers during the wildfire season. The information here is intended to help employers understand the hazards associated with exposure to wildfire smoke, and to outline some measures you can implement to minimize worker exposures.

This general information is not intended to address the specific hazards and exposures faced by wildfire fighters. It is intended for other workplace environments where workers may be exposed to wildfire smoke.

What is in wildfire smoke?

Wildfire smoke is a complex mixture of particles and gases containing hundreds of chemicals. The smoke contains large amounts of fine particulate matter, as well as gases such as carbon monoxide, carbon dioxide, and nitrogen oxides. Depending on the type of materials burned, the smoke may also contain sulfur oxides, volatile organic compounds, and other compounds such as hydrocarbons and formaldehyde that are known to be carcinogenic. These components can vary greatly over time, from fire to fire, and from area to area within a fire zone.

What are the potential health effects of wildfire smoke?

There are a number of potential health effects associated with wildfire smoke. Inhaling fine particles of smoke has been linked with the aggravation of pre-existing respiratory and cardiovascular disease.

Workers exposed to wildfire smoke may raise concerns about long-term health effects, such as an increased risk of cancer or other chronic health problems. In general, however, the long-term health risks from short-term exposure to low or moderate levels of smoke during a wildfire event are considered to be quite low.

The potential for adverse health effects from wildfire smoke depends on the level and duration of exposure, age of the workers, individual susceptibility, and other factors. For these reasons, not everyone exposed to smoke will be affected in the same way.

What are some common symptoms of smoke exposure?

Breathing in smoke can cause irritation of the eyes, nose, and throat. It can also cause headaches and worsening of allergies. In healthy workers exposed to smoke for short periods of time, symptoms are likely to be temporary and will resolve when the smoke clears.

Workers with lung diseases such as asthma or chronic obstructive pulmonary disease (COPD) — as well as workers with other chronic diseases, pregnant women, and older adults — are likely to experience more serious or acute symptoms. These symptoms can include shortness of breath, persistent coughing, wheezing, chest tightness, and increased mucous production.

Be aware of other health issues related to wildfires, such as heat stress or heat exhaustion, and the need for workers to stay hydrated by drinking lots of water. In addition, remind workers of other safety hazards associated with wildfire smoke, such as reduced visibility.

My workers work outside. How can I limit their exposure to the smoke?

The primary approach to minimize the health risks of wildfire smoke is to reduce contact with the smoke as much as possible.

If the nature of your work requires workers to be outside, look for ways to reduce workers' level of physical activity when possible, since physical exertion can increase air intake as much as 20 times.

Consider the direction of the smoke and follow the air quality advisories in the area to schedule the work accordingly. For example, look for ways to relocate work to less smoky areas or reschedule it until the air quality improves. Keep in mind that some workers may be more susceptible to health effects from the smoke and may need additional measures to reduce their exposure.

What can I do to reduce the exposure to smoke in indoor workplaces?

Wildfire smoke can travel long distances from the actual fires and can affect the quality of indoor air. However, there are steps that you can take to reduce the amount of wildfire smoke entering your building:

- Inspect the HVAC system to make sure it is working properly.
- Check the HVAC system's air filters to ensure they are clean and are not damaged, dislodged, or leaking around the edges. If the system is capable, replace the filters with higher efficiency filters for the duration of the wildfire event.
- Temporarily reduce the intake of outdoor air. This should only be done in consultation with a qualified HVAC technician or ventilation engineer. The pressure within the building should remain slightly positive compared to outdoors.
- Reduce indoor particle levels in small areas by using individual portable air cleaners equipped with high-efficiency particulate air (HEPA) filters or electrostatic precipitators. Ozone-generating air cleaners should not be used because they generate ozone gas, a respiratory irritant that can exacerbate respiratory symptoms.

What precautions can workers in vehicles take?

Workers who primarily work in vehicles are advised to keep vents and windows closed and, if available, operate the air conditioning in "recirculate" mode. Workers should also open the windows occasionally in areas with good air quality to prevent carbon dioxide from building up inside the vehicles.

Workers should also consider the potential for heat stress or heat exhaustion, as well take precautions against the hazards of driving in low-visibility environments (e.g., drive with lights on, do circle checks).

What should I do to protect my workers who need to work in close proximity to the smoke?

There may be situations that require workers such as health care professionals, first responders, and other essential service workers to be in closer proximity to moderate levels of smoke.

One strategy to help protect these workers is to create a “clean air refuge” with a portable HEPA filtration unit. Keeping windows and doors closed within the refuge area will reduce the ambient smoke.

In some circumstances, personal protective equipment such as respiratory protection may be necessary when workers are exposed to moderate to high levels of smoke.

Should workers use respirators as protection against smoke exposure?

Respirators may be required depending on the level of the smoke and the work activity performed by workers. The most common type of respirator used to protect against wildfire smoke exposure is the N95 particulate-filtering facepiece respirator. For workers who require more advanced protection against fine particulates and irritant gases and vapours, elastomeric respirators (both half-face and full-face types) fitted with a combination of organic vapour cartridge/P100 filter are more appropriate.

Note that masks are not substitutes for respirators. A mask refers to something like a surgical mask that is loose fitting and does not form a tight seal with the face. These masks are not designed to filter the fine particulates or gases and vapours in smoke.

If workers use respirators for protection against wildfire smoke, they must be fit tested and must meet the standards (e.g., NIOSH-approved) for the type of work and hazards faced. Workers must also be instructed in the respirator’s use and limitations. [8.33\(2\)](#) in the OHS Guidelines includes a list of filtering facepiece types from other countries that have been deemed acceptable as equivalent to NIOSH N95.

What should I do if workers report symptoms consistent with smoke exposure?

If your workers report symptoms of smoke exposure, treat the exposure in the same manner as other workplace injuries and illnesses and respond accordingly. Workers with severe symptoms should seek medical attention immediately.

You are also required to report and investigate certain incidents. See [Report a workplace injury or disease](#) and [Conducting an employer investigation](#) on worksafebc.com for more information.

Are there any regulatory requirements that apply to wildfire smoke?

The Occupational Health and Safety Regulation does not provide specific requirements for wildfire smoke. However, you must treat this hazard in a similar manner as other general workplace hazards. The *Workers Compensation Act* and Regulation specify the requirements for employers to ensure the health and safety of workers in all work.

Sections of the Regulation that may also apply to wildfire smoke exposure include the following:

- Part 4, Emergency preparedness and response
- Part 4, Indoor air quality
- Part 5, Containers and storage
- Part 5, Flammable and combustible substances
- Part 5, Controlling exposure
- Part 8, Personal protective equipment
- Part 26, Forestry operation fire fighting

Where can I find more information?

[Air Quality Advisories](#) (BC Environmental Protection and Sustainability)

[Air Quality Health Index](#) (BC Air Quality)

[Guidance for BC Public Health Decision Makers During Wildfire Smoke Events](#) (BC Centre for Disease Control)

[Health Effects of Smoke Exposure due to Wildland Fires](#) (Manitoba Environmental Health)

[Heat stress](#) (WorkSafeBC)

[Respiratory protection](#) (WorkSafeBC)

[Smoke Exposure Info for Workers](#) (Alberta Health Services)

[Wildfire recovery: OHS information for employers](#) (Alberta Work Safe)

[Wildfire recovery: OHS information for workers](#) (Alberta Work Safe)

[Wildfire Smoke: A Guide for Public Health Officials](#) (U. S. Environmental Protection Agency)

[Wildfire Smoke and Air Quality](#) (BC Centre for Disease Control)

[Wildfire Smoke and Your Health](#) (Alberta Health Services)

[Wildfires and Your Health](#) (HealthLinkBC)

[Wildfires](#) (U. S. Occupational Safety and Health Administration)