

Wildfire smoke, air quality and your health

About this document

The information in this document is intended to help BC Public Service employees understand the hazards associated with exposure to wildfire smoke. The document covers:

- Wildfire smoke events
- Composition of wildfire smoke
- Health effects of wildfire smoke
- People particularly at risk
- Symptoms of exposure to wildfire smoke
- Measures employees can implement to minimize exposure and actions they can take to protect themselves from wildfire smoke, including the use of “Air Scrubbers” or “HEPA Filters” and masks
- A list of resources to provide more information on wildfire smoke, air quality and health

Wildfire smoke events

The experience of wildfire smoke events is becoming more common for many B.C. residents. A warming climate is providing conditions for more frequent and longer wildfires. Wildfire events usually occur in summer months, although “wildfire season” is getting longer as well, with events now happening from spring to fall.

Wildfires produce dense smoke, and the smoke may be carried in the air for thousands of kilometres from the fire source. The wildfire does not have to be in your region for you and your community to be affected by wildfire smoke.

Predicting wildfire conditions is difficult. This includes when wildfires may occur, how large an area they may consume, the amount of smoke generated and the distance the smoke may travel.

Components of wildfire smoke

Wildfire smoke is a complex mixture of particles, gases and vapour containing hundreds of chemicals. Smoke contains large amounts of particulate matter and gases include sulphur and nitrogen dioxide and carbon monoxide.

The actual composition of smoke depends on what is being burned, the temperature of the fire and the wind conditions. The particulates include fine particulate matter not visible to the human eye. Fine particulates are especially dangerous as they can reach deep into our lungs and bloodstream.

Health effects of wildfire smoke

There are many potential health effects associated with wildfire smoke. Inhaling fine particles from smoke is linked with aggravating respiratory and other chronic diseases and long-term health problems. Long-term risks from short-term exposure to wildfire smoke are considered quite low, however.

Smoke generated can be a mild to severe irritant; for some individuals it can be life threatening. The potential for health effects from wildfire smoke depends on the

amount and duration of exposure, age and personal susceptibility and other factors. Exposure to wildfire smoke will affect people differently.

Who is at greatest risk from wildfire smoke?

Exposure to air pollution from wildfire smoke may irritate your lungs, cause inflammation and alter your immune response.

Some people are at higher risk of health problems when exposed to wildfire smoke: seniors, pregnant people, people who smoke, people outdoors (working or recreating) and people with pre-existing chronic conditions such as asthma, chronic obstructive pulmonary disease, diabetes and heart disease.

During wildfire conditions producing heavy pollution, everyone is at risk regardless of their age or health. When wildfire smoke is contributing to air pollution in your area, take appropriate measures to avoid the smoke as much as possible.

Symptoms from exposure to wildfire smoke

Breathing in smoke can cause eye, nose and throat irritation. Smoke may also cause headaches and worsen allergies.

Workers at higher risk are likely to experience symptoms that are more acute and serious and may include shortness of breath, coughing, wheezing, chest tightness and increased mucous production.

It is important to be aware of health issues related to wildfires, including heat stress, heat exhaustion and staying sufficiently hydrated.

How do I avoid exposure to wildfire smoke?

Check [B.C. air quality advisories](#) for current information on any advisories in your area.

During a wildfire smoke event, workers must have access to clean air. Clean indoor airspaces are the most effective means to reduce exposure to wildfire smoke. Most BC Public Service workplaces have mechanical ventilation (HVAC) that is operated to industry standards, including WorkSafeBC and American Society of Heating, Refrigerating and Air-conditioning Engineers (ASHRAE). If air quality advisories are in effect, facilities managers increase their monitoring of HVAC systems and make any necessary changes.

Effective filtration is the primary defense for building occupants from air drawn into a building through the HVAC system. Air conditioning units trap outside particulate in their filters, reducing the amount of particulate that can travel indoors. Each HVAC system has a design-specified filter for removing bacteria, pollen, soot and other small particulates commonly found in the air, particularly during a wildfire. Indoor air quality (IAQ) in buildings with mechanical ventilation is cleaner than outside air and better than many homes in B.C. that have little to no mechanical ventilation and rely on outside air for venting and cooling.

For workplace buildings without mechanical ventilation or air conditioning, please contact Workplace Health and Safety via [AskMyHR](#).

Should our workplace bring in “Air Scrubbers” or “HEPA Filters”?

Local smoke conditions may vary greatly, and indoor air quality of similar and adjacent buildings may also vary. Workplaces should review:

1. The [BC Air Quality Health Index](#) and [Fire Smoke Canada](#) or [BC Wildfire website](#) or [app](#) forecast for their area:
 - What is the AQHI level and is smoke forecasted to get better or worse?
2. The local weather forecast:
 - Is the forecast saying smoke will clear or get worse?
 - Is there a change in the wind or weather that is predicted to improve the air quality?
3. The indoor air quality in the workplace:
 - Is there a visible haze inside?
 - Is there particulate in the air or on surfaces?
 - Is it just odor (the smell of smoke is apparent at concentrations much lower than when it presents as a health risk)?

Workplaces may want to speak with their facilities management unit or onsite maintenance staff about actions being taken for the building's HVAC system. Other strategies to reduce the entrance of wildfire smoke into buildings includes ensuring windows are closed and tightly latched, inner doors on vestibules and entrance halls are not propped open and that exterior doors stay closed or are

used as little as possible. For example, if the door is for employee only access, ask employees to reduce their number of trips in and out of the building.

Should I wear a mask?

At lower levels, wildfire smoke is generally experienced as an irritant and we smell smoke long before it becomes a health risk. As air quality decreases, however, pollution can pose a health risk, especially for those with respiratory conditions. Follow advice from Public Health about being outdoors, limiting physical activity and mask wearing.

Well-fitted respirators including N95, KN95 and KF94 provide effective protection from the particles in wildfire smoke. Three-layer cloth or disposable masks can offer moderate protection if they fit well. [Learn more about masks for wildfire smoke.](#)

Breathing while wearing a mask or respirator is more laborious than normal breathing and can create a health risk for people with lung or heart conditions. People with these conditions should speak with their care team about using a mask or respirator.

If you are working or playing outside during periods of heavy wildfire smoke, reduce or reschedule strenuous activity. Information about the Air Quality Health Index and physical activity can be found on the [BC Center for Disease Control website.](#)

Often wildfire smoke is lighter in the early morning. Use resources such as the [BC Air Quality Health Index](#) and [Fire Smoke Canada](#) to plan outside work or activities.

As a supervisor, if you have employees that must undertake strenuous work activity outdoors during periods of heavy wildfire smoke, contact a BCPSA Occupational Safety Specialist for advice using [AskMyHR](#) and choose service category Workplace Safety and sub category Other Issues and Inquiries.

References and resources

- Visit the [BC Wildfire Service](#) and download the [Android App](#) or [iOS App](#)
- [BC Centre for Disease Control](#)
- [HealthLinkBC](#)
- National Collaborating Centre for Environmental Health, including [wildfire, smoke and health](#) and [public health planning for wildfire smoke](#)
- Health Canada, including [wildfire smoke, air quality and your health](#) and [guidance for cleaner air spaces during wildfire smoke events](#)
- [United States Environmental Protection Agency](#)