

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, portable air cleaners, 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. Climate change is creating 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 that may be carried in the air for very long distances from the fire source. A 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 very fine particulates (PM_{2.5}) – not visible to the human eye – 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 contributing to many long-term physical and mental health problems.

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?

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.

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: infants and young children, pregnant people, seniors, 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.

Symptoms from exposure to wildfire smoke

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

Some people, especially those at higher risk, may experience more severe symptoms including shortness of breath, severe cough, wheezing, and chest pain. Seek prompt medical attention if you experience these symptoms.

Hot weather may happen at the same time as wildfires and can lead to serious health issues including heat stress and heat exhaustion. It is important to stay cool and sufficiently hydrated. More information is available in [Heat, the workplace and your health](#).

How do I avoid exposure to wildfire smoke?

Check current air quality alerts for areas in the [Lower Mainland](#) and [outside the Lower Mainland](#). You can also check the [BC Air Quality Health Index](#) and [Fire Smoke Canada](#) for current and forecasted air quality in your area.

Working Indoors

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.

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 handling 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.

Reducing infiltration of smoke into buildings is also important to reduce exposure by keeping windows and doors closed as much as possible. For example, if a door is for employee only access, ask employees to reduce their number of trips in and out of the building.

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

Working Outdoors

If you are working outside during periods of heavy wildfire smoke, reduce or reschedule strenuous activity. Wildfire smoke conditions can change quickly; to plan activities use the [Lower Mainland, outside the Lower Mainland](#) air quality advisories, [BC Air Quality Health Index](#) and [Fire Smoke Canada](#). Information about wildfire smoke and physical activity can be found on the [BC Centre for Disease Control website](#).

For supervisors, if your employees 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.

Should our workplace bring in air scrubbers, portable air cleaners or HEPA filters?

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

1. The [Lower Mainland](#), [outside the Lower Mainland](#), [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)?

Should I wear a mask?

Follow advice from Public Health about being outdoors, limiting physical activity and mask wearing.

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.

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. This may create a health risk for people with certain health conditions. If you're in doubt, consult your healthcare team about using a mask or respirator.

References and resources

- Visit [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](#)
- [AQMap.ca](#) for current air quality information