



## Wildfire Smoke Hazards and Worksite Safety

As wildfire activity increases across British Columbia, outdoor workers face growing health risks from exposure to wildfire smoke. Employers must take action to monitor air quality, reduce exposure, and protect workers' health in compliance with **WorkSafeBC** regulations.

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### What's in Wildfire Smoke?

Wildfire smoke is made up of:

- **Fine Particulate Matter (PM2.5):** These particles are small enough to be inhaled deep into the lungs, potentially entering the bloodstream.
- **Carbon Monoxide (CO):** Can reduce oxygen delivery throughout the body, especially dangerous during physical exertion.
- **Volatile Organic Compounds (VOCs)** – Can irritate the eyes, nose, and throat.
- **Nitrogen Oxides & Sulfur Oxides** – May trigger asthma attacks and other respiratory conditions.

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### Health Effects

Exposure can cause:

- Coughing, throat irritation, and breathing difficulties
- Worsening of asthma, COPD, or other respiratory conditions
- Headaches, fatigue, dizziness
- Increased risk of cardiovascular issues with prolonged exposure

Wildfire smoke significantly impacts people's physical and mental health in various ways, with effects varying based on individual susceptibility and exposure levels.

## Physical Health Impacts

Respiratory Issues are common, ranging from irritation (coughing, sore throat, stinging eyes) to severe exacerbation of pre-existing conditions like asthma and COPD. Prolonged exposure can reduce lung function. Cardiovascular problems also arise, with fine particles entering the bloodstream and increasing the risk of heart attacks and strokes, especially for those with heart disease. Other physical symptoms include headaches, fatigue, and systemic inflammation. Children, older adults, pregnant people, and individuals with chronic conditions are particularly vulnerable.

## Mental Health Impacts

Wildfire smoke contributes to significant stress and anxiety due to the constant reminder of threat, uncertainty, and disruption of daily life. It can lead to emotional distress (worry, frustration, sadness), sleep disturbances, and cognitive difficulties (concentration issues). Smoke exposure can also worsen pre-existing mental health conditions. Physiologically, fine particulate matter can cause brain inflammation and increase stress hormones, directly impacting mental well-being. Youth, women, and those directly affected by fires are especially susceptible to these mental health consequences.

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## BC WorkSafe Regulations and Employer Responsibilities

Under [WorkSafeBC Regulation Part 5 – Chemical Agents and Biological Agents](#), employers must:

- Identify and assess hazards related to wildfire smoke
- Implement effective control measures
- Provide worker training and access to protective equipment

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## Safe Work Practices in BC During Wildfire Smoke Events

### 1. Monitor Air Quality with Local Tools

- Use the [BC Air Quality Health Index \(AQHI\)](#) and [Firesmoke.ca](#) for regional forecasts.
- Take action based on AQHI readings:
  - **1–3 (Low):** Proceed as normal.
  - **4–6 (Moderate):** Monitor workers with health concerns; reduce heavy work.
  - **7–10+ (High to Very High):** Reschedule non-essential work, supply respirators, and limit duration of exposure.

- Visibility can act as a practical, "trust your senses" indicator. If distant landmarks appear hazy or disappear entirely, it's a clear sign of poor air quality due to smoke. This visual cue helps people understand the severity of the situation even before checking the official AQHI.

## 2. Reduce Worker Exposure

- **Reschedule or relocate work** to areas with better air quality if possible.
- **Limit strenuous activities** outdoors during high AQHI readings.
- Provide **more frequent breaks** in clean air shelters or vehicles with HEPA-filtered systems.

## 3. Provide Respiratory Protection

- Supply **NIOSH-certified N95 respirators** when exposure to PM2.5 is significant. N95 respirators do not protect against gases or vapours present in smoke (e.g., carbon monoxide, volatile organic compounds).
- Fit testing is recommended for proper use.
- To protect against wildfire smoke beyond N95 masks, focus on improving indoor air quality by staying indoors, sealing homes, upgrading HVAC filters to MERV 13 or higher, and using portable air purifiers with HEPA filters. For outdoor protection, N95 respirators are effective for particles, while P100 respirators offer superior particulate filtration. Elastomeric respirators with appropriate cartridges can filter both particles and some gases. Ineffective options include cloth, surgical, or paper masks.
- Note: Respirators must be used in accordance with a formal **exposure control plan** as required by WorkSafeBC.

## 4. Establish Clean Air Break Areas

- Use trailers, buildings, or enclosed vehicles with filtered air to give workers a place to recover.
- Ensure cooling and ventilation in these areas, particularly during high heat and smoke events.

## 5. Educate and Communicate

- Hold regular **safety meetings** on wildfire smoke hazards.
- Train workers to recognize symptoms of smoke exposure and understand how to use respirators.
- Encourage workers to report any symptoms such as shortness of breath, dizziness, or persistent cough.

## 6. Plan for Emergency Response

- Have a procedure for responding to signs of serious exposure.
- Workers with pre-existing respiratory or heart conditions may need to be reassigned or removed from exposure.

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## What Workers Should Report Immediately

- Difficulty breathing or chest pain
- Wheezing, persistent coughing, or throat tightness
- Confusion, fatigue, or fainting
- Any worsening of chronic respiratory or cardiac conditions

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## Conclusion

Protecting workers from wildfire smoke in British Columbia is a shared responsibility. Employers must comply with WorkSafeBC regulations by monitoring conditions, adapting work practices, and equipping workers with the knowledge and tools to stay safe. During wildfire season, safety procedures must be proactive, not reactive.

For more detailed guidelines and resources, visit:

- [CCOHS Wildland Fires and Smoke]([https://www.ccohs.ca/oshanswers/safety\\_haz/forest\\_fires.html](https://www.ccohs.ca/oshanswers/safety_haz/forest_fires.html))
- [UBC Safety & Risk Services](<https://srs.ubc.ca/health-safety/occupational-hygiene/wildfire-smoke-health-safety/>)
- [Wildfire smoke: Frequently asked questions](<https://www.worksafebc.com/en/resources/health-safety/information-sheets/wildfire-smoke-frequently-asked-questions-faq?lang=en>)
- [Wildfire Safety While At Work]([https://www.bcforestsafesafe.org/wp-content/uploads/2023/07/mag\\_CrewTalk-WildfireSafetyWhileAtWork.pdf](https://www.bcforestsafesafe.org/wp-content/uploads/2023/07/mag_CrewTalk-WildfireSafetyWhileAtWork.pdf))
- [Wildfire Smoke Safety for Outdoor Work Toolbox Talk] ([https://www.bcforestsafesafe.org/wp-content/uploads/2025/07/Toolbox\\_Talk\\_Wildfire\\_Smoke\\_22-Jul-25FINAL.pdf](https://www.bcforestsafesafe.org/wp-content/uploads/2025/07/Toolbox_Talk_Wildfire_Smoke_22-Jul-25FINAL.pdf))

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