



Connecting air quality, health and safety at work, and the climate emergency

A joint statement from CUPE Ontario's Climate Justice and Health and Safety committees

The impacts of climate change are happening now. In Canada, we are seeing longer duration of heat events, droughts, increasing frequency of severe storms and shorter snow and ice cover seasons. These changes have resulted in an increased number and severity of wildfires.¹ Wildfires and the smoke caused by these fires affect all people's physical and mental health, particularly historically disadvantaged communities, including Indigenous populations and people with disabilities.² Poor air quality from wildfires can affect inside and outside workers, even though they may be hundreds of miles away from the source. Regardless of the distance or source of outdoor air pollutants, employers in Ontario have a general duty to ensure that all reasonable precautions are taken to protect workers from the hazards associated with poor air quality.

Wildfire smoke is an occupational hazard

It is well known that wildfire smoke at any level presents a human health hazard. The Canadian Centre for Occupational Health and Safety reports³ that wildfire smoke is made up of fine particulate matter and gases containing hundreds of chemicals, which may have toxic levels of carbon monoxide, carbon dioxide and nitrogen oxide. Depending on the fire source, smoke may also contain known carcinogens, including sulfur oxide and VOCs. Other chemicals found in wildfire smoke, include heavy metals and hydrocarbons, may persist in the environment for a long time.⁴

Wildfire smoke can cause short and long-term health issues.⁵ Mild symptoms include irritation of the eyes, nose, and throat and headaches. More severely, wildfire smoke exposure can worsen allergies and lead to persistent coughing, wheezing, shortness of breath, chest tightness, and increased mucous production.⁶ Workers who suffer from certain medical conditions may be aggravated on poor air quality days, especially those with weakened respiratory and cardiovascular systems.⁷ Pregnant and older workers are especially at risk.

¹ Wang, X., Parisien, M.A., Taylor, S.W., Candau, J.N., Stralberg, D., Marshall, G. A., Little, J.M., & Flannigan, M.D. (2017). Projected changes in daily fire spread across Canada over the next century. *Environmental Research Letters*, 12(2), 025005. Retrieved February 18, 2020 from <https://doi.org/10.1088/1748-9326/aa5835>

² Rodriguez, J. CTV News. Wildfires disproportionately threatening First Nations and worst could be yet to come, study finds. (August 26, 2021). Retrieved June 03, 2022 from <https://www.ctvnews.ca/climate-and-environment/wildfires-disproportionately-threatening-first-nations-and-worst-could-be-yet-to-come-study-finds-1.5544760>

³ Canadian Centre for Occupational Health and Safety, Forest Fires and Wildfire smoke - Retrieved July 14, 2023 from https://www.ccohs.ca/oshanswers/safety_haz/forest_fires.html

⁴ Korsiak, J., Pinault, L., Christidis, T., Burnett, R., Abrahamowicz M., Weichenthal, S., Long-term exposure to wildfires and cancer incidence in Canada: a population-based observational cohort study *The Lancet Planetary Health* Vol 6, Issue 5, E400-E409, May 2022, [https://doi.org/10.1016/S2542-5196\(22\)00067-5](https://doi.org/10.1016/S2542-5196(22)00067-5)

DOI: [https://doi.org/10.1016/S2542-5196\(22\)00067-5](https://doi.org/10.1016/S2542-5196(22)00067-5)

⁵ Health of Canadians in a Changing Climate. (2022). Retrieved June 08, 2022 from <https://changingclimate.ca/site/assets/uploads/sites/5/2022/02/CCHA-REPORT-EN.pdf>

⁶ Occupational Health Clinics for Ontario Workers- Wildfire Smoke – A Definite Concern for All [Ontario] Workers – Retrieved on July 14, 2023 from <https://www.ohcow.on.ca/posts/wildfire-smoke-ontario-workers/>

⁷ National Institute for Occupational Safety and Health – Wildfire Smoke and Outdoor Work – Retrieved July 14, 2023 from <https://www.cdc.gov/niosh/topics/firefighting/wffsmoke.html>

Employers have responsibilities to protect workers from poor air quality caused by wildfires

Your employer has a general duty under the *Occupational Health and Safety Act* to assess the hazards at work and take reasonable precautions to eliminate the sources of harm or danger. When the hazard can't be eliminated, your employer must take steps to control workers' exposure to the hazard properly. PPE is the last step after all other controls are implemented and the harm or danger persists.

For poor air quality, employers should:

- Identify workers at increased risk of exposure.
- Explain how the employer will monitor poor air quality and advise workers of the dangers (see the AQHI Table below)
- Explain the hazards to workers and outline the signs and symptoms of smoke exposure.
- Outline what to do if a worker shows adverse symptoms suspected of being a result of smoke inhalation.
- Develop protocols to signal an emergency and obtain immediate help.
- Implement training requirements for the administrative and personal protective equipment controls chosen.
- Regularly check in with workers.

Workers have a right to know about the hazards at work and participate in the workplace health and safety system. The joint health and safety committee is best placed for assessing and recommending controls to protect workers.

Eliminating the hazard

Controlling the hazard of wildfire smoke at the source is impossible for the employer. Yet, workers who suffer from medical conditions may be aggravated on days when wildfire smoke is present. E.g., those who suffer from cardiovascular disease, pregnant women and older workers. These workers will likely need accommodation. See: [What is Duty to Accommodate?](#)

Controls along the path

Indoors

- Exposure to wildfire smoke is more than an outdoor hazard. Ventilation systems in buildings and vehicles should be balanced to limit outdoor intake while ensuring that indoor and outdoor air contaminants are properly exhausted and don't build up in workspaces. A qualified HVAC person is required to ensure a proper balance in buildings.
- Use high efficiency particulate air (HEPA) filters
- Windows and doors should be closed.
- Enhance indoor ventilation with portable air purifiers

Outdoors

- Eliminating non-essential activities
 - Determine if outdoor activities can be moved indoors.
 - Determine if outdoor activities can be suspended until the air quality improves.
- Limiting strenuous activities when work must take place outside
 - Determine if strenuous and heavy activities be postponed or suspended during poor air quality days.
 - Select activities that are unlikely to increase breathing/heart rate
 - Take frequent breaks, preferably indoors.

PPE

- A respirator can reduce exposure to the contaminants in wildfire smoke. The Canadian Standards Association has developed a respirator selection tool that can help workers to ensure they have adequate equipment (<https://www.csagroup.org/store/standards-support-tools/occupational-health-and-safety/respirator-selection-tool/>)
- If an employer provides a respirator (e.g. N95), they must implement a program under Ontario *Regulation 833 Control of Exposure to Biological and Chemical Agents in the Workplace*, sections 8--13.
- An employer who provides a worker with PPE must ensure the worker receives training and information on the equipment's use, care and limitations.

A filtering facepiece respirator (e.g., N-95) will help filter out particulate matter but won't help protect the worker from toxic gases. Additionally, respirators cause undue heat and discomfort especially in warm conditions. Employers should consider the added stress when considering work factors such as workplace (lower) and rest periods (provide more). As such the focus is on controls at the source and along the path.

Using the Air Quality Index

Due to the complexity of the mixture that makes up wildfire smoke, there are no occupational exposure thresholds for safe work when exposed to wildfire smoke. The level of susceptibility to health harms depends on the smoke content level and duration of the exposure and the worker's age and susceptibility. For these reasons, outdoor air readings are used to determine the appropriate measures to take.

Health Canada has developed the Air Quality Health Index (AQHI)⁸ to show the health risk associated with the air pollution we breathe. The AQHI is calculated using a formula from three pollutants which best indicate the health risk from the combined impact of different pollutants in the air. The three pollutants used in the calculation are:

- Ground-level Ozone (O₃) – a gas formed by photo-chemical reactions in the atmosphere.
- Fine Particulate Matter (PM_{2.5}) – the amount of different tiny airborne particles that are of a size that can be inhaled deep into the lungs.
- Nitrogen Dioxide (NO₂) – a gas released by motor vehicle emissions and power plants that rely on fossil fuels.

⁸ Health Canada Air Quality Index - <https://www.canada.ca/en/environment-climate-change/services/air-quality-health-index.html>

The following table provides the health messages for 'at risk' individuals and the general public for each of the AQHI Health Risk Categories.

Health Risk	Air Quality Health Index	Health Messages	
		At Risk Population*	General Population
Low	1 - 3	Enjoy your usual outdoor activities.	Ideal air quality for outdoor activities.
Moderate	4 - 6	Consider reducing or rescheduling strenuous activities outdoors if you are experiencing symptoms.	No need to modify your usual outdoor activities unless you experience symptoms such as coughing and throat irritation.
High	7 - 10	Reduce or reschedule strenuous activities outdoors. Children and the elderly should also take it easy.	Consider reducing or rescheduling strenuous activities outdoors if you experience symptoms such as coughing and throat irritation.
Very High	Above 10	Avoid strenuous activities outdoors. Children and the elderly should also avoid outdoor physical exertion.	Reduce or reschedule strenuous activities outdoors, especially if you experience symptoms such as coughing and throat irritation.

* People with heart or breathing problems are at greater risk. Follow your doctor's usual advice about exercising and managing your condition.

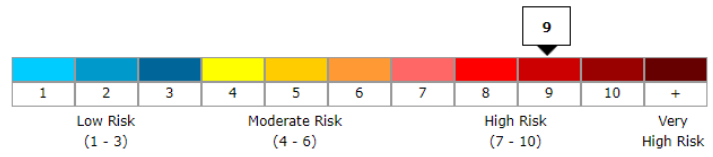
Current air quality conditions for Ontario can be found here: <http://www.airqualityontario.com/aqhi/>

Health Canada recommends the following steps when applying the AQHI and to actual conditions:

Step 1.
Check the current hourly AQHI as you go about your daily activities.

Windsor West: Current Air Quality Health Index

Calculated at 11:00 am EDT Thursday, June 29, 2023



When planning outdoor activities, use the forecast maximums and corresponding health messages as a guide. These values estimate the maximum that the AQHI will reach during each forecast period.

Forecast for Windsor West

- Forecast Air Quality Health Index maximums for Windsor West
- **Issued at:** 10:10 am EDT June 29, 2023

Forecast Air Quality Health Index maximums for Windsor West

Period	Forecast Maximum (Issued at 10:10 am EDT June 29, 2023)
Thursday	7 - High Risk
Thursday Night	7 - High Risk
Friday	6 - Moderate Risk

Step 2.
Follow the health advice given in the corresponding health messages.

Health Message for Windsor West

- Current Air Quality Health Index: **9**
- Calculated at 11:00 am EDT Thursday, June 29, 2023
- Risk: **High**

At-Risk Population:

- Reduce or reschedule strenuous activities outdoors. Children and the elderly should also take it easy.
- **Find out if you are at risk**

General Population:

- Reduce or reschedule strenuous activities outdoors, especially if you experience symptoms such as coughing and throat irritation.

Step 3.
Listen to your body and calibrate how you are feeling with the index value - air quality affects you differently depending on your risk. You can determine your level of risk to air pollution by consulting your physician or using the "find out if you are at risk" page.

The right to refuse work that endangers health and safety

Workers have the right to refuse unsafe work, including work made unsafe by wildfire smoke.

As a worker in Ontario, you have the legal right to refuse unsafe work under the *Occupational Health and Safety Act* when you believe that any equipment, workplace condition or contravention of the OHS Act is likely to endanger you or another person's health and safety.

Here's how you can refuse unsafe work:

1. Notify your supervisor or employer about the circumstances for refusing to work. The supervisor or employer must investigate the situation with you and the worker-selected member from the joint health and safety committee, or a union representative.
2. You must remain in a safe place near your workstation until this step in the investigation is completed.
3. If, following this investigation, you believe the unsafe condition still exists, you may continue to refuse the work. Either you or your employer must notify a government inspector.
4. The inspector must investigate in consultation with you, the employer, and the worker-selected member of the joint health and safety committee, or the union representative. The inspector's decision must be provided in writing to all those involved in the investigation.
5. During this time, you may be assigned other reasonable alternative work or directions by your employer. However, you must remain in a safe place and made available during the inspector's investigation.
6. The employer can not assign the work under investigation by the inspector to another worker unless that worker has been advised of the reason for your work refusal in the presence of the worker member from the joint health and safety committee or the union representative. This worker also has the right to refuse.

You cannot be threatened, dismissed, disciplined, intimidated or coerced for complying with the legislation, according to Section 50 of the OHS Act."

Source: <https://cupe.ca/refusing-unsafe-work-step-step-guide>

Conclusion

We do not have to accept wildfire season as a new regular occurrence. These fires are caused by the climate emergency and inaction around a truly just transition. As workers, we care about the planet, jobs, and clean and livable communities. Collective action in response to the climate emergency can make big changes. We created a [toolkit](#) for taking action on the environment in your local. CUPE Ontario's Climate Justice Committee urges locals to take the ideas in this toolkit and use them as part of a collective approach for tackling climate change.

For those seeking additional information about the occupational hazards of wildfire smoke, the Occupational Health Clinics for Ontario Workers will hold a webinar entitled "Where there's smoke..." Understanding Particulate Hazards Indoors and Out" on July 21, 2023 at 1:30pm.

(<https://www.ohcow.on.ca/event/where-theres-smoke-understanding-particulate-hazards-indoors-and-out/>)