

Wildland fires are occurring more frequently in the United States and present a health hazard for outdoor workers (agricultural workers, utility workers, construction workers, etc.)

While these workers are not often exposed to the physical hazards of the burning wildland fire itself, these workers may be exposed to smoke from a wildland fire in their work area.

**What is wildfire smoke?**

Wildfire smoke is a complex mixture of gases and particles from burning vegetation and other materials. As a wildfire burns, different compounds are released in the smoke, such as

- carbon monoxide**
- carbon dioxide**
- hydrocarbons**
- particulate matter (PM)**
- benzene**
- aldehydes**

Smoke is made up of many different types and amounts of potentially toxic compounds and can change very quickly depending on factors in the wildfire environment, such as weather, fire behavior, and the type of vegetation burning. Because of this, workers may be exposed to varying types and amounts of compounds in wildfire smoke throughout their work shift or during different fire events.

**Can wildfire smoke affect an outdoor worker’s health?**

There is clear potential for such exposures to result in adverse health outcomes.

The risk of experiencing symptoms and adverse health effects due to smoke exposure varies from person to person. Workers can have different individual risk factors such as age and health conditions (e.g., pre-existing heart or lung disease) that make them more likely to be affected by

wildfire smoke.

**Some health effects** known or suspected to be caused by wildfire smoke include:

- Eye irritation, sore throat, wheeze, and cough,
- Asthma and chronic obstructive pulmonary disease (COPD) exacerbations,
- Bronchitis and pneumonia,
- Cardiovascular (heart and blood vessel) outcomes.

The scientific community does not fully understand how long-term, repeated exposures or exposures to high concentrations of wildfire smoke may affect a worker’s health.

Additionally, very little is known about how exposure to many different compounds at the same time, including compounds released from the burning of **man-made materials**.

Employers should take action to limit their workers’ exposures when a wildfire is emitting smoke in and around their work environment.

**What can employers and workers do to reduce smoke exposure?**

Employers and workers should prepare to reduce exposures to smoke when necessary.

The following steps can be implemented to reduce smoke exposure:

- **Frequently monitor air quality conditions** in the area by visiting the Environmental Protection Agency (EPA) or the state health department’s air quality website.
- **Relocate or reschedule work tasks** to smoke-free or less smoky areas.
- **Reduce levels of physical activity** when possible.
- Require workers to **take frequent breaks** in places that are free from smoke, and

*(continued)*

- **Limit the worker’s smoke exposure** by making accommodations for that worker to perform his/her duties in a location that reduces exposure to smoke, if possible. **To create an indoor environment that reduces exposure** to and protects the occupants from wildfire smoke, it is important that employers and building managers:
  - **Install air cleaners** equipped with a high-efficiency particulate air (HEPA) filter or electrostatic precipitators,
  - **Ensure that windows** and other building openings such as loading docks and bays are kept closed to reduce overall smoke exposure inside,
  - **Operate HVAC systems in the re-circulate setting** or temporarily reduce the amount of outdoor air supplied to the building,

When respirators are used on a voluntary basis in an occupational setting, employers should follow [the requirements for the voluntary use of respirators](#).

Visit the Washington Smoke Blog for smoke forecasts and wildfire information.

[www.wasmoke.blogspot.com](http://www.wasmoke.blogspot.com)  
[www.ecology.wa.gov/waqa](http://www.ecology.wa.gov/waqa).

[https://www.lni.wa.gov/safety-health/safety-rules/rulemaking-stakeholder-information/wildfire-smoke?utm\\_medium=email&utm\\_source=govdelivery#background](https://www.lni.wa.gov/safety-health/safety-rules/rulemaking-stakeholder-information/wildfire-smoke?utm_medium=email&utm_source=govdelivery#background)

## **Personal Protective Equipment (PPE) such as respirators**

The use of personal protective equipment (PPE), such as a respirator, may limit a worker’s exposure to a hazard in the workplace. A NIOSH-approved **filtering facepiece respirator (FFR)**, like an N95 can be used to reduce exposure to **airborne particulates from wildfire smoke**. It is important to understand that FFRs do not protect against gases, such as carbon monoxide.

If an employer requires their employees to use respiratory protection to limit smoke exposure in an occupational setting, they must always do it as part of a comprehensive respiratory protection program as required under L&I’s DOSH division. This includes medical evaluations, respirator fit testing, and training of the workers required to wear respirators. Additionally, tight-fitting respirators cannot be used by people with facial hair. (Incomplete face seal)