

# Worker Protection from Wildfire Smoke

## Did you know?

Wildfires in California have become a year-round environmental threat. Increasingly, concerns have been raised about the potentially serious health effects of wildfire smoke exposure on workers, including those who may be at great distances from wildfire events. To address this growing worker health threat, Cal/OSHA has adopted a permanent standard to protect workers from exposure to wildfire smoke ([California Code of Regulations, title 8, section 5141.1](#)).



## What workers may be exposed to wildfire smoke?

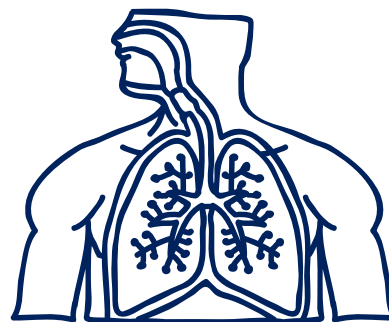
All types of workers are at risk of exposure to wildfire smoke, even if they are not close to the wildfire since smoke can travel long distances and pollute the air. Employees who work outdoors and those in structures, buildings or vehicles without filtered air systems are at higher risk of being exposed to wildfire smoke. Employees that work in such conditions for prolonged periods of time need to take special precautions to avoid breathing in smoke-polluted air. These higher-risk jobs include, but are not limited to: construction, agriculture, utilities, landscaping, warehousing and maintenance/cleaning.

## What is wildfire smoke made of and how does it affect health?

Wildfire smoke includes gases and tiny particles called “particulate matter” that can travel through the air over long distances. These particles are made up of whatever is being burned – not only plants and vegetation, but also remnants of residential or commercial structures, vehicles, industrial or household chemicals, and other unknown materials. The Environmental Protection Agency (EPA) Air Quality Index (AQI) PM2.5 (particulate matter that is 2.5 microns or less) levels are of greatest concern. Although these particles are not visible to the naked eye, they can get deep into the lungs and then enter the bloodstream and circulate throughout the body. These particles are considered a type of airborne contaminant and are one of many contaminants monitored by the EPA.

People may experience health symptoms if they breathe in wildfire smoke particles. These symptoms may include:

- Irritation of the eyes, nose, and throat
- Difficulty breathing
- Asthma attacks
- Chest pain
- Persistent cough, phlegm, and wheezing



Excessive PM2.5 levels can also cause more serious long-term health problems, such as reduced lung function, chronic bronchitis, worsening of asthma, heart failure and early death. Adults over 65 years of age, children and individuals with pre-existing health conditions are at higher risk for smoke-related health problems.

## Who does the Cal/OSHA wildfire smoke standard apply to?

The Cal/OSHA Protection from Wildfire Smoke Standard (CCR Title 8, section 5141.1) applies to workplaces where employees are exposed to a current AQI for PM2.5 of 151 or greater for more than one hour in their shift, and the employer should reasonably anticipate that employees may be exposed to wildfire smoke. The following workplaces are **exempt** from this standard:

- Enclosed buildings or structures in which the air is filtered by a mechanical ventilation system and the employer ensures that windows, doors, bays and other openings are kept closed, except when it is necessary to open doors to enter or exit.
- Enclosed vehicles in which the air is filtered by a cabin air filter and the employer ensures that windows, doors and other openings are kept closed, except when it is necessary to open doors to enter or exit the vehicle.
- The employer demonstrates that the concentration of PM2.5 in the air does not exceed a concentration that corresponds to a current AQI of 151 or greater by measuring PM2.5 levels at the worksite in accordance with procedures provided in section 5141.1.
- Firefighters engaged in wildland firefighting.



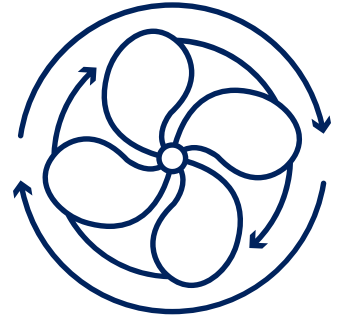
Disclaimer: This document provides a general overview, please refer to section 5141.1 directly for details on all of the requirements.

## What should be done to protect employees' health at work?

Employers must take steps to provide workers with a safe and healthy work environment. In the case of wildfire smoke, the following can be done to prevent or reduce worker exposure to wildfire smoke:

First:

- Move the work to indoor spaces where air is filtered and use vehicles equipped with filtration.



If that is not feasible or doesn't reduce exposures to below AQI PM2.5 151 then:

- Move the work to an area where the Air Quality Index (AQI) PM2.5 is lower.
- Change the work schedules.
- Lower work intensity.
- Increase the number of rest periods.

Finally, provide employees with NIOSH-approved respirators that effectively protect the wearer from the inhalation of PM2.5 (see how to wear a respirator on page 5).

In addition, employers must effectively train workers in a language and manner readily understandable by employees on the information provided in Appendix B of section 5141.1, which includes:

- The health effects of wildfire smoke.
- The right to obtain medical treatment without fear of reprisal.
- How employees can obtain the current AQI PM2.5.
- The requirements of section 5141.1.
- The employer's two-way communication system used to address changing air quality concerns.
- The importance, limitations and benefits of using a respirator.
- How to properly use a respirator and the employer's methods to protect employees from wildfire smoke.

## MONITOR THE AIR QUALITY

Employers must check or obtain the AQI for PM<sub>2.5</sub> at the start of each shift and periodically thereafter as needed to protect the health of employees. Unless the employer does their own PM<sub>2.5</sub> monitoring using the prescribed methods in section 5141.1, they can use any of the following sources:

- [The U.S. EPA AirNow](#)
- [The U.S. Forest Service](#)
- [The Interagency Wildland Fire Air Quality Response Program](#)
- [The California Air Resources Board](#)
- [The local air pollution control district](#)
- [The local air quality management district](#)



Workers are also encouraged to check for AQI PM<sub>2.5</sub> levels through these sources.

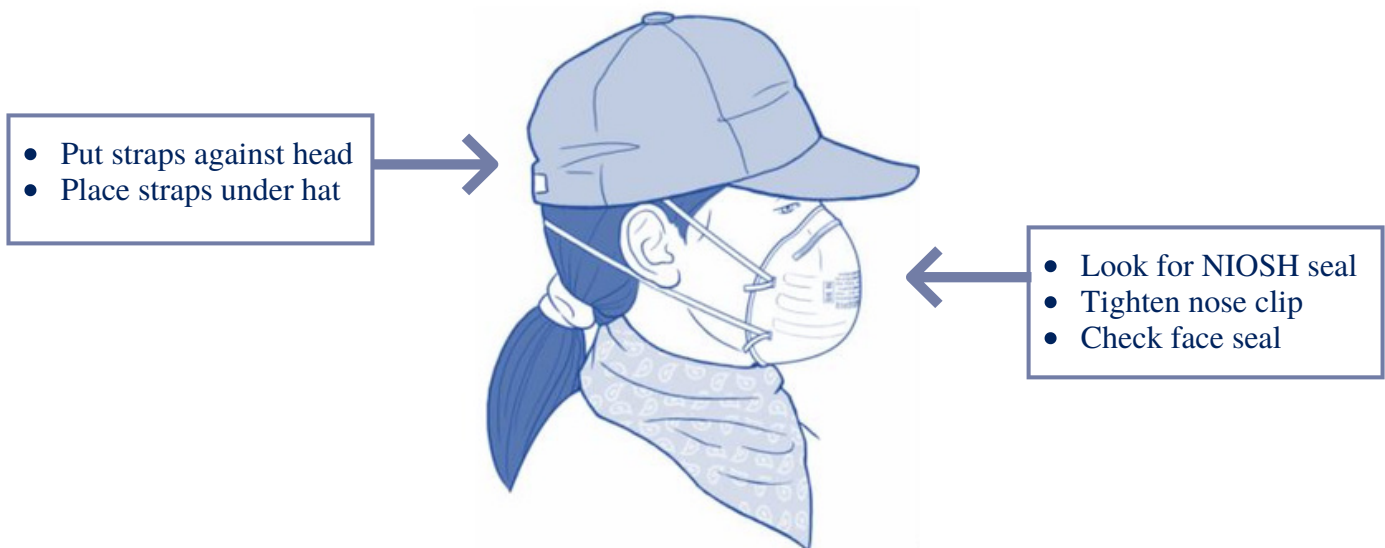
If the current AQI for PM<sub>2.5</sub> is 151 or higher, employers must take steps to protect workers. As you can see in the PM<sub>2.5</sub> graphic below, PM<sub>2.5</sub> levels between 101 and 150 are still considered to be unhealthy for sensitive people.

Air Quality Index – Particulate Matter	
301-500	Hazardous
201-300	Very Unhealthy
151-200	Unhealthy
101-150	Unhealthy for Sensitive Groups
51-100	Moderate
0-50	Good

Image: Air Quality Index (AQI) for Particulate Matter

## WEAR A RESPIRATOR

Employers must provide workers with respirators for voluntary use, such as NIOSH-approved N95 filtering facepiece respirators, when the current AQI for PM2.5 is 151 or higher, and workers are encouraged to wear them. When the current AQI for PM2.5 is higher than 500, employers must provide and require workers to use respirators that will reduce employee exposure to PM2.5 to an AQI less than 151. Make sure to follow instructions for wearing the respirator appropriately. Employers must provide replacements if they get dirty, wet or damaged. A bandana, cloth face covering, or a surgical mask does not adequately protect you from the particles found in wildfire smoke.



- Respirator should feel snug around your face
- Shave facial hair for tight seal
- People with heart conditions or lung disease should consult doctor before wearing a respirator

Image: How to wear a NIOSH-approved N95 filtering facepiece respirator  
Credit: UC Davis Western Center for Agricultural Health and Safety

## COMMUNICATION AND EMERGENCY PROCEDURES

The employer must establish and implement a system for communicating wildfire smoke hazards in a language and manner readily understandable by employees, including provisions designed to encourage employees to inform the employer of wildfire smoke hazards at the worksite without fear of reprisal. The system must include effective procedures for:

Informing employees of:

- The current AQI for PM2.5.
- Protective measures available to employees to reduce their wildfire smoke exposures.

Encouraging employees to inform the employer if any of the following occurs:

- Worsening air quality.
- Adverse symptoms that may be the result of wildfire smoke exposure such as asthma attacks, difficulty breathing, and chest pain.

For more information, visit:

<https://www.dir.ca.gov/dosh/doshreg/Protection-from-Wildfire-Smoke/Wildfire-smoke-emergency-standard.html>

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