

Workers Exposed to Wildfire Smoke Hazards

What are the hazards?

Wildfire smoke can be a hazard for workers even when they are not close to a fire. The smoke contains very fine particles in the air, also called particulate matter (PM). The major health concerns are the smallest particles called “PM2.5” because they are 2.5 microns in diameter or smaller. That is much smaller than the diameter of a human hair. PM2.5 can irritate the lungs and cause serious or even fatal health effects, such as:

- Reduced lung function
- Bronchitis
- Worsening of asthma
- Heart failure

Cal/OSHA has a regulation, [section 5141.1](#), Protection From Wildfire Smoke, that requires employers to protect workers from unhealthy levels of PM2.5. This fact sheet provides an overview, not all the details of the section 5141.1 requirements.

When does an employer have to comply with section 5141.1?

Two conditions must be in place:

1. The current Air Quality Index (AQI) for PM2.5 for the location where workers are working is 151 or greater. The current AQI is the method used by the U.S. Environmental Protection Agency (U.S. EPA) to report air quality.
2. The employer should reasonably anticipate that workers could be exposed to wildfire smoke.

Employers with workplaces and operations in any of the following conditions do not have to implement section 5141.1:

- Enclosed buildings or structures in which the air is filtered by a mechanical ventilation system, and windows, doors, bays and other openings are kept closed except when doors are opened 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 doors are opened to enter or exit.
- The employer measures the concentration of PM2.5 in the air and shows that the current AQI is not 151 or higher.
- Workers exposed to a current AQI for PM2.5 of 151 or



greater for a total of one hour or less during a shift.

- Firefighters engaged in wildland firefighting.

What does an employer have to do if section 5141.1 applies to their workplace?

- **Identify harmful exposures:** Determine what exposures to PM2.5 their workers have at the start of each shift and then periodically, as needed.
- **Communicate with workers:** Inform workers of wildfire smoke hazards so all workers understand. This includes encouraging workers to inform their employer—without fear of retaliation—of worsening air quality and symptoms that might be related to wildfire smoke. The employer must inform workers about:
 - The current AQI for PM2.5.
 - Protective measures available to them to reduce their wildfire smoke exposures.
- **Train and instruct workers:** Provide training to workers so that they understand at least the following information regarding wildfire smoke:
 - The health effects.
 - The right to obtain medical treatment without fear of retaliation.
 - How workers can find out the current AQI for PM2.5.
 - The requirements of the Cal/OSHA wildfire smoke standard.
 - The employer’s two-way communication system.
 - The employer’s methods to protect workers from wildfire smoke.
 - The importance, limitations, and benefits of using a respirator.

- How to properly put on and use the respirators provided by the employer.
- **Control harmful exposures to workers:** Reduce workers' exposures to wildfire smoke in the following ways:
 1. **Engineering Controls:** For instance, enclose the work area and filter the air so that workers' exposure to PM2.5 is less than a current AQI of 151, or to the extent feasible.
 2. **Administrative Controls:** If that is not feasible or enough, see if they can relocate the work to another location where the current AQI for PM2.5 is lower, change work schedules, reduce work intensity or provide more rest periods.
 3. **Respirators:** Provide NIOSH-approved respirators if workers' exposure to PM2.5 cannot be reduced to a current AQI of less than 151.
 - **Where the current AQI for PM2.5 is from 151 to 500:** Employers must provide—and encourage the use of—respirators, such as N95 masks, to all workers for voluntary use. Employers must ensure that workers:
 - Clean or replace their respirators as appropriate, store and maintain them so that they do not present a health hazard to users.
 - Are provided the content of [Appendix B](#) of section 5141.1 as part of their training.
 - **Where the current AQI for PM2.5 is higher than 500:** Employers must provide—and require workers to use—respirators that will reduce exposure to PM2.5 inside the respirator to an equivalent of an AQI less than 151.

How to find out if the air will be unhealthy

Workers can ask their employer, as they must use one of the following methods to determine the current AQI:

- Check AQI forecasts and the current AQI for PM2.5 from either of the following websites or directly by telephone, email, text or other effective means:
 - [The U.S. EPA AirNow](#)
 - [The U.S. Forest Service Interagency Wildland Fire Air Quality Response Program](#)
 - [The California Air Resources Board](#)
 - [The local air pollution control district](#)
 - [The local air quality management district](#)

- Measure PM2.5 levels at the worksite and convert that to the corresponding AQI using [Appendix A](#) of section 5141.1.

There are some exceptions where the employer does not need to determine PM2.5 exposures:

1. The employer assumes the current AQI for PM2.5 is greater than 500 and uses the engineering, administrative and respiratory protection controls discussed above.
2. In emergency operations (rescue and evacuation; and utilities, communications, and medical operations that directly aid emergency or firefighting) where the employer:
 - Assumes the current AQI for PM2.5 is 151 or greater.
 - Provides enough NIOSH-approved respirators to all workers for voluntary use.
 - Encourages workers to use them.
 - Ensures respirators are cleaned or replaced as appropriate, stored, and maintained so that they do not become a health hazard to users.
 - Ensures Appendix B of section 5141.1 is used for workers' training.

How to protect yourself

- Check the AQI forecasts and current AQI for PM2.5 yourself for the area where you are working by using the same websites listed for your employer to use.
- You have the right to file a complaint with Cal/OSHA if you feel your working conditions are not safe. First, check for the Cal/OSHA district office that has jurisdiction over your location in one of these two ways, then give them a call:
 - Check the poster that all employers must display that lists the addresses and telephone numbers of the Cal/OSHA offices.
 - Go to www.dir.ca.gov/dosh/Complaint.htm.

Other resources

Cal/OSHA

- [Worker Safety and Health in Wildfire Regions](#)
- [Respiratory Protection Fact Sheet](#)

Cal/OSHA regulations

- [Protection from Wildfire Smoke](#)
- [Respiratory Protection](#)

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For assistance regarding this subject matter, employers may contact Cal/OSHA Consultation Services at: 1-800-963-9424 or InfoCons@dir.ca.gov
www.dir.ca.gov/dosh/consultation.html

