

Wildfire Smoke

Protecting Outdoor Workers in California

During California's wildfire season, exposing outdoor workers to the smoke and the associated small particulate matter contained in it may pose a significant health risk. Through recently passed legislation, Cal/OSHA requires employers to address the risk of exposure to wildfire smoke for your employees. Here are some things you should know:

Hazards of Wildfire Smoke

Wildfire smoke is a mix of gases and fine particles from burning vegetation, building materials, plastics, and other combustible materials. Older adults, pregnant women, and people with pre-existing conditions are more likely to experience serious symptoms; though, anyone can become ill from exposure to wildfire smoke. The size of these particles is very small, less than the diameter of a human hair. This means that the particles can easily enter our blood through the lungs, affecting our health. Symptoms may include burning eyes, runny nose, chest pain, fatigue, coughing, wheezing, difficulty breathing, worsening of asthma, and rapid heartbeat.

Terms you Need to Know

Particulate Matter (PM 2.5)

The exposure level of particles is measured in "Particulate Matter" or PM. This is the sum of particles suspended in the air. Fine particulate matter such as wildfire smoke can be carried hundreds of miles away from the fire itself. Wildfire smoke is often 2.5 micrometers or smaller. Particulate matter that is 10 micrometers usually irritates only the eyes, nose, and throat. Particulate matter that is 2.5 micrometers or smaller can be inhaled into the deepest part of the lungs causing serious or even fatal health effects.

Air Quality Index (AQI)

The AQI is the air quality index. Safety Managers need to know the AQI for areas where employees may be working. This can be measured through a direct read device or government websites such as [AirNow](#).

Regulations require employers to designate a person to provide daily updates on wildfire smoke conditions in areas where your work is performed. This person must communicate with field supervisors regularly to ensure employees are aware of the risks in their area as smoke shifts throughout the day. Please see the Action Plan for monitoring procedures.

Protecting Employees

Employees are considered at risk if they are working in an area where they may be exposed to wildfire smoke. Determining the AQI on [AirNow](#) allows you to gather quantitative data to conduct a risk assessment of the health level of wildfire smoke employees are exposed to. The levels of health concern for the AQI of PM 2.5 are determined as; 0–50 good, 51–100 moderate, 101–150 unhealthy for sensitive groups, 151–200 unhealthy, 201–300 very unhealthy, 301–500 hazardous. According to Cal/OSHA [§5141.1](#), safety controls are required if the AQI for PM2.5 is greater than 151.

If your risk assessment indicates little to no level of health concern, provide training to your employees to raise awareness and communicate procedures for addressing an event in the future (such as a shift in the smoke).

If your risk assessment indicates risk potential with AQI above 151, consider the following (in order of effectiveness):

- Move employees out of the exposure zone to eliminate the risk. This may involve shifting the crews to an enclosed building or vehicle with filtered air, limiting outdoor exposure to less than one hour, or shifting your crews to another work zone where the AQI is lower. Moving your employees to a safer area is considered an engineering control, the most effective way to minimize risk potential.

- Consider reducing shifts in the danger zone. Adjust work schedules to limit the amount of work done outdoors in areas with poor air quality. Rotate employees out of the danger zone regularly.
- Voluntary use of proper PPE such as N95 respirators can help reduce exposures; though, this would trigger additional training requirements including the importance, limitation, and benefits of using a respirator. Please see the Respiratory Protection Program for Wildfire Smoke for training details. This approach would apply to areas where the AQI is between 151-500.
- When the AQI is higher than 500, employers must require the use of respirators and develop a respiratory protection plan or remove employees from the work zone immediately.

Employee Training

The designated safety managers need to conduct document training for employees who may be exposed to harmful wildfire smoke. The training must include:

- The health effects of wildfire smoke
- How to obtain medical treatment
- How to obtain the current AQI for PM2.5
- The employer's methods and communication system to protect employees from wildfire smoke
- The importance, limitations, and benefits of using a respirator when exposed to wildfire smoke and how to properly put on, use, and maintain the respirators provided by the employer

Program Requirements & Documentation

As with all safety efforts, it is critical that the elements of the program be well documented, please see the Action Plan for written procedures. Safety managers need to establish effective means of communicating with field employees to inform them of any changes in conditions. This is similar to the required communication for heat illness prevention. Safety managers must also ensure that employees have the power and authority to stop

work

should the air quality deteriorate. Any questions or requests for assistance from employees should be addressed in a timely manner and must come without fear of reprisal at all levels of the organization.

Summary

Exposure to Wildfire Smoke presents significant health risks. As an employer, it is your responsibility to assess the danger, communicate with employees, train them to recognize the risk potential, teach them how to respond should conditions warrant, monitor air quality and ensure effective use of PPE. BHHC, has created documents to further assist your operations including a sample Action Plan and Respiratory Protection Program for Wildfire Smoke. Please see the additional resources and contact your local [BHHC Loss Control Consultant](#) for additional assistance.

Additional Resources:

- [Cal/OSHA GISO Title 8, Section 5141.1 Protection from Wildfire Smoke](#)
- [UC Davis Western Center for Agricultural Health and Safety](#)
- [Protecting Outdoor Workers Exposed to Smoke from Wildfires](#)
- [Protecting Indoor Workplace from Wildfire](#)
- [Smoke with Building Ventilation Systems and Other Methods](#)
- [Cal/OSHA Protection from Wildfire Smoke Training Video \(Spanish\)](#)
- [Cal/OSHA Training Video on the Use of N95 Respirators](#)

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Please contact the Loss Control team at:
losscontrol@bhhc.com for any further questions.