

## Key requirements: Oregon OSHA's permanent rules for protection from wildfire smoke



Effective July 1, 2022, Oregon OSHA's adopted permanent rules – OAR 437-002-1081 and OAR 437-004-9791, Protection from Wildfire Smoke – will apply to employers whose employees are or will be exposed to unhealthy or hazardous levels of wildfire smoke. With large-scale wildfire events across the western United States becoming more frequent, wildfire smoke is an increasing danger to Oregon workers. The harmful chemicals and tiny particles suspended in wildfire smoke can make anyone sick. The tiny particles of most concern and addressed in these standards is the particulate matter with a diameter in micrometers of 2.5 or less, commonly referred to as PM2.5.

Mild symptoms of wildfire smoke exposure include coughing, runny nose, and eye irritation and inflammation, while more serious and sometimes fatal health effects include trouble breathing, asthma attacks, reduced lung function, chest pain, and heart attacks.

Although OAR 437-004-9791 applies only to agricultural employers, its key requirements and exemptions are identical to OAR 437-002-1081, which applies for all other Oregon employers such as general industry, construction, and forest activities.

### These standards do not apply to the following:

- Enclosed buildings, structures, and vehicles in which air is filtered by a mechanical ventilation system, and when exterior openings are kept

closed except when it is necessary to briefly open doors to enter or exit

- Employers that have predetermined to suspend operations to prevent employee exposure to wildfire smoke levels for PM2.5 at or above 35.5 µg/m3 (AQI 101)
- Employees working at home

### The following activities and operations are partially exempt from the standards:

- Wildland firefighting and associated support activities such as fire camp services and fire management
- Evacuation, rescue, utilities, communications, and medical operations directly involved in or aiding emergency operations or firefighting operations
- Work activities involving only intermittent employee exposure of less than 15 minutes in an hour to wildfire smoke levels for PM2.5 at or above 35.5 µg/m3 (AQI 101), for a total exposure of less than one hour in a single 24-hour period

Employers with employees who are exposed to wildfire smoke levels for PM2.5 at or above 35.5 µg/m3 (AQI 101) only when engaged in a partially exempt activity or operation listed above, are required to provide information and training only on elements in subsection (4)(a) through (4)(g) in the standards, in addition to providing NIOSH-approved filtering facepiece respirators for voluntary use.

AQI value	Wildfire Smoke standards' key requirements for exposure level
101 - 250	<ol style="list-style-type: none"> <li>1. Assess and monitor air quality at each work location where employees are exposed</li> <li>2. Provide and document employee training</li> <li>3. Implement two-way communication system</li> <li>4. Implement engineering and administrative controls</li> <li>5. Provide NIOSH-approved filtering facepiece respirators for voluntary use</li> </ol>
251 - 500	<ol style="list-style-type: none"> <li>1-4. For AQI 101 – 250 above; and</li> <li>7. Provide NIOSH-approved filtering facepiece respirators for mandatory use by implementing a Wildfire Smoke Respiratory Protection Program in accordance with Appendix A, in the Protection from Wildfire Smoke standards</li> </ol>
501 and above	<ol style="list-style-type: none"> <li>1-4. For AQI 101 – 250 above; and</li> <li>7. Provide NIOSH-approved respirators for mandatory use by implementing a Respiratory Protection Program in accordance with 29 CFR 1910.134 or OAR 437-004-1041</li> </ol>

**DESCRIPTION OF EACH KEY REQUIREMENT (1-7):**

**1. Assess and monitor air quality at each work location where employees are exposed**

The level of wildfire smoke at work locations that triggers these standards is when the PM2.5 ambient air concentration equals or exceeds 35.5 micrograms per cubic meter (µg/m3), which is equivalent to an Air Quality Index (AQI) for PM2.5 of 101 or greater. The AQI was developed by the [U.S. Environmental Protection Agency \(EPA\)](https://www.epa.gov/air-quality-index) as an indicator of overall air quality for the general population, and is largely and easily accessible by the public. When work locations are affected by wildfire smoke, employers and employees with internet access can determine air quality conditions by checking the current average AQI value for PM2.5 for their geographical area by using the following websites or apps:

- Oregon DEQ website: <https://oraqi.deq.state.or.us/home/map>

- U.S. EPA AirNow Fire and Smoke Map website: <https://fire.airnow.gov/>
- OregonAir (DEQ) app: Search for the free "OregonAir" app in your app store
- U.S. EPA AirNow app: Search for the free "EPA AIRNow" app in your app store



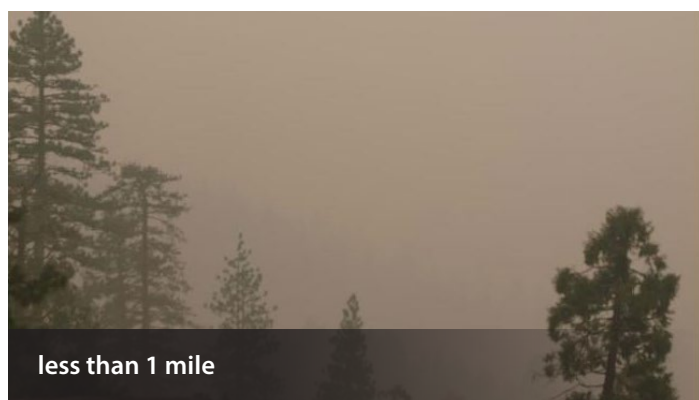
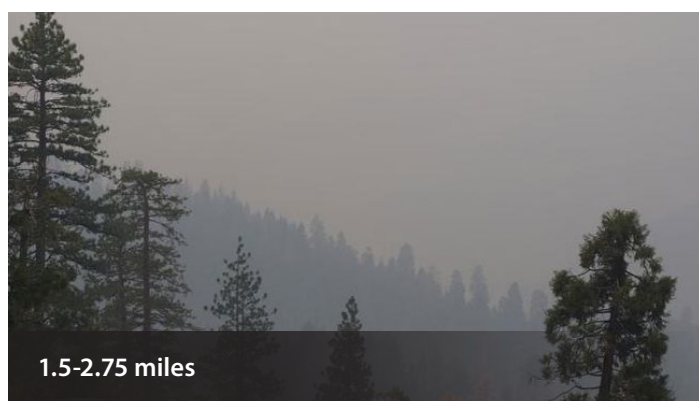
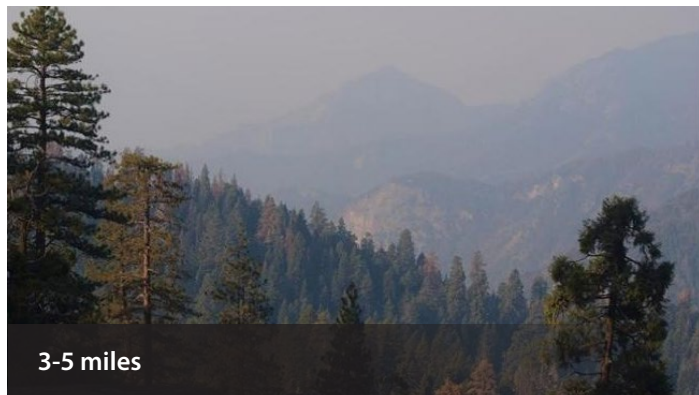
Additionally, employers can choose to directly measure workplace ambient air concentration for PM2.5 by purchasing and using a testing device for PM2.5 and following the manufacturer's instructions. This method will likely provide the most accurate level of PM2.5, especially for indoor workplaces where the air is not filtered by mechanical ventilation.

For employers that have determined and can demonstrate that none of the methods listed above are available for their work location, a method known as the [5-3-1 Visibility Index](#) can be used to estimate the current air concentration for PM2.5, and equivalent AQI value, as shown below:

AQI Index Values	PM2.5 Concentration in µg/m3	Visibility Index Values (How far you can see)
0 – 50	0.0 – 12.0	more than 15 miles
51 – 100	12.1 – 35.4	5 – 15 miles
<b>101 – 150</b>	<b>35.5 – 55.4</b>	<b>3 – 5 miles</b>
<b>151 – 200</b>	<b>55.5 – 150.4</b>	<b>1 – 3 miles</b>
201 - <b>(251)</b> - 300	150.5 - <b>(200.9)</b> - 250.4	<b>1 mile</b>
301 and higher	250.5 and higher	less than 1 mile

Rule exposure thresholds and visibility distances highlighted in red.

**VISIBILITY DISTANCES:**



Photos above are from the United States Forest Service's InciWeb – Incident Information System, at [inciweb.nwcg.gov](http://inciweb.nwcg.gov)



## 2. Provide and document employee training

Training must be provided to employees in a manner and a language they readily understand and must include:

A. The symptoms of wildfire smoke exposure, including:

- Eyes: burning sensations, redness, and tearing of the eyes caused by irritation and inflammation that can temporarily impair vision
- Respiratory system: runny nose, sore throat, cough, difficulty breathing, sinus irritation, wheezing, and shortness of breath
- Fatigue, headache, irregular heartbeat, and chest pain

B. The potential acute and chronic health effects from wildfire smoke exposure, including increased health risks to sensitive groups, and how chronic exposures can increase the risk of cardiovascular disease and can exacerbate asthma.

C. Each employee's right to report health issues related to wildfire smoke exposure and obtain

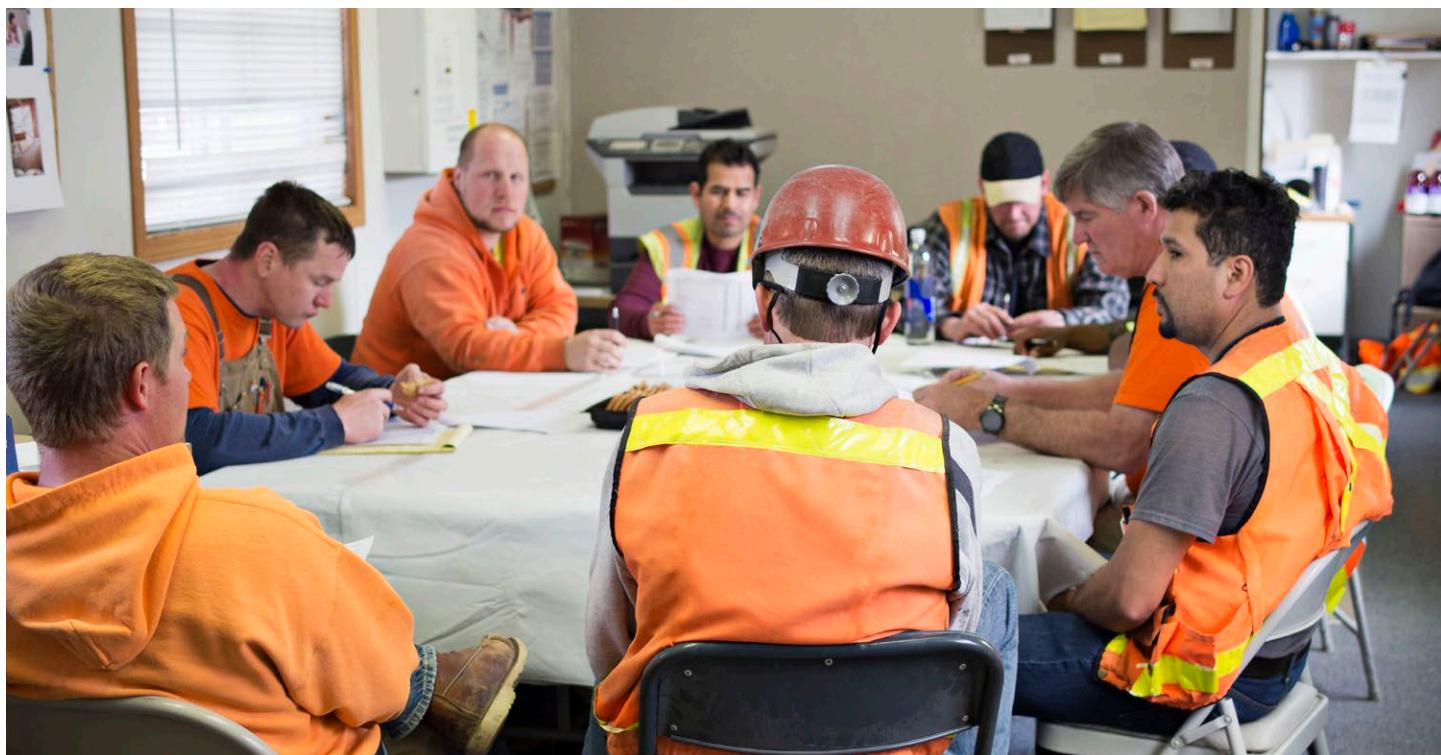
medical treatment for such workplace exposures without fear of retaliation.

D. How employees can obtain the current average and forecasted ambient air concentration for PM<sub>2.5</sub> and equivalent AQI value for their work location.

E. The importance, limitations, and benefits of using a filtering facepiece respirator, which is provided by the employer at no cost to the employee to reduce exposure to wildfire smoke, and how to use and maintain their filtering facepiece respirator.

F. The employer's methods to protect employees from wildfire smoke, including how filtering facepiece respirators are required to be made readily accessible to employees for voluntary use, and how employees can obtain such respirators before exposure and replace them when needed.

G. Review of any job tasks performed by employees in which the use of a filtering facepiece respirator would expose the wearer to a hazard associated with a substantially more serious injury or illness





than the potential acute health effects of wildfire smoke exposure.

- H. The procedures supervisors must follow when an employee reports or exhibits health symptoms that necessitate immediate medical attention, including, but not limited to, asthma attacks, difficulty breathing, and chest pain.
- I. How to operate and interpret exposure results based on any PM2.5 monitoring device used by the employer in compliance with the standard.
- J. An explanation of the employer's two-way communication system for wildfire smoke exposure control information.

Training elements (a) through (e) above are included in [Oregon OSHA's wildfire smoke training course](#) that is available to all employers and employees in both English and Spanish.

Employers that are not partially exempt from the standard must verify supervisor and employee training by preparing a written or electronic record that includes at least the name or identification number of each employee trained, the dates of the trainings, and the name of the people who conducted the training. The most recent annual training record for each employee must be maintained for one year.

### **3. Implement two-way communication system**

A two-way communication system must be used to communicate wildfire smoke information between supervisors and employees. Such information includes any changes in the air quality at the work location that would necessitate an increase or decrease in the level of exposure controls. The two-way communication must also allow employees to report issues concerning their access to exposure controls and any health symptoms from wildfire smoke exposure that could necessitate medical attention. The means to communicate information may include, but are not limited to, in-person, cell phone, and two-way radio.

### **4. Implement engineering and administrative controls to employees exposed to PM2.5 levels at or above 35.5 µg/m3 (AQI 101)**

Engineering and administrative controls that are functionally possible and would not prevent the completion of work must be used to reduce employee exposure to wildfire smoke. Such controls include relocating outdoor workers to enclosed buildings or to outdoor locations where the air quality is better, and making work schedule changes to reduce employee exposures. The use of engineering and administrative

controls may be used in combination with NIOSH-approved filtering facepiece respirators.

**5. Provide NIOSH-approved filtering facepiece respirators for voluntary use to employees exposed to PM2.5 levels at or above 35.5 µg/m3 (AQI 101)**

Employer-provided respirators for voluntary protection from wildfire smoke must either be distributed directly to employees or be made readily accessible to any exposed employee at each work location. Respirator supplies must be in a location that does not restrict or hinder employee access nor discourage the replacement of a respirator when needed. NIOSH-approved filtering facepiece respirators do not include any "KN" designations, such as KN95s. Such "KN" respirators are not appropriate to reduce employee exposure to wildfire smoke. NIOSH-approved filtering facepiece respirators appropriate for wildfire smoke protection include: N95, N99, N100, R95, R99, R100, P95, P99, and P100.

**6. Provide NIOSH-approved filtering facepiece respirators for mandatory use to employees exposed to PM2.5 levels at or above 200.9 µg/m3 (AQI 251) by implementing a Wildfire Smoke Respiratory Protection Program in accordance with Appendix A of the Protection from Wildfire Smoke standards**

Employer-provided NIOSH-approved filtering facepiece respirators used strictly for mandatory protection from wildfire smoke must either follow the Wildfire Smoke Respiratory Protection Program as described in Appendix A, which do not require medical evaluations and fit testing, or be in accordance with the applicable Respiratory Protection standard, 29 CFR 1910.134 or OAR 437-004-1041.



**7. Provide NIOSH-approved respirators for mandatory use to employees exposed to PM2.5 levels at or above 500.4 µg/m3 (AQI 501) by implementing a Respiratory Protection Program in accordance with 29 CFR 1910.134 or OAR 437-004-1041**

Due to the high hazard level of air quality conditions at or above 500.4 µg/m3 (AQI 501), employers must ensure that employees wear appropriate NIOSH-approved respirators in accordance with the applicable Respiratory Protection Standard, [29 CFR 1910.134](#) or [OAR 437-004-1041](#).



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