

# Wildfire Smoke Protection



# Objectives

This information is designed to address 9 of the 10 training requirements found in Oregon OSHA's [rule on Protection from Wildfire Smoke](#), which became effective beginning August 9<sup>th</sup>, 2021 as a temporary rule. The new rule was permanently adopted and is in effect as of July 1<sup>st</sup> 2022. The permanent rule has several important differences from the temporary rule, including new AQI thresholds and the requirement of NIOSH-approved respirators—KN95 respirators are no longer acceptable alternatives for wildfire smoke protection.

To help strengthen worker protections against wildfire smoke, Oregon OSHA developed a rule that addresses this hazard. The rule encompasses a variety of exposure controls, training and information, and other measures. Not all aspects will be covered, as the focus is on the training requirements.

# Topics

- **Employer requirements**
- **Exemptions**
- **Wildfire smoke components and hazards**
- **Measuring Air Quality Index (AQI) and hazard thresholds**
- **Required training components**
  - symptoms
  - health effects
  - sensitive groups
  - employee rights
  - emergency procedures
  - AQI monitoring
  - notification
  - respirator use

# Employer Responsibilities

- Employers are responsible for ensuring that employees are adequately protected from hazards.
- Adequate protection is defined as providing training, information, ongoing communications, and appropriate PPE for all employees.

# Exemptions

- Enclosed buildings
  - Buildings and structures with air filtration provided by mechanical ventilation systems while exterior openings are kept closed, except when necessary to permit ingress/egress
- Enclosed vehicles
  - Vehicles with cabin air filters and consistently closed windows and doors
- Employees working at home

These exemptions generally do not apply to essential LC staff and contractors.



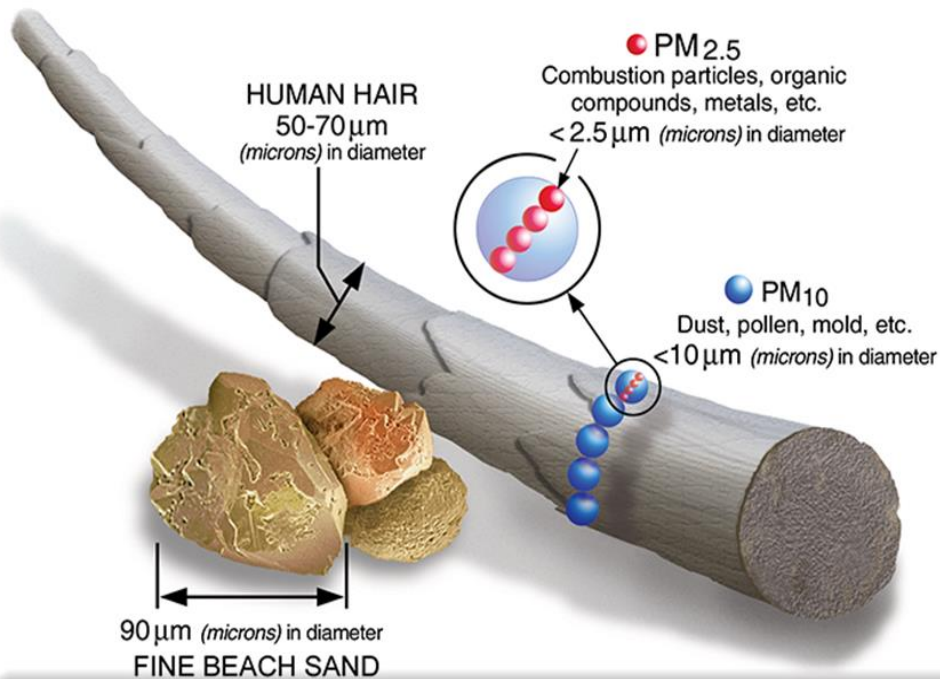
# Wildfire Smoke Composition



Wildfire smoke is mostly water vapor, but also contains carbon monoxide, vaporized and combusted chemicals, ash, and other particles. Airborne particulate matter is the primary culprit of harmful air quality during smoke incidents, though other harmful components may also be prevalent.

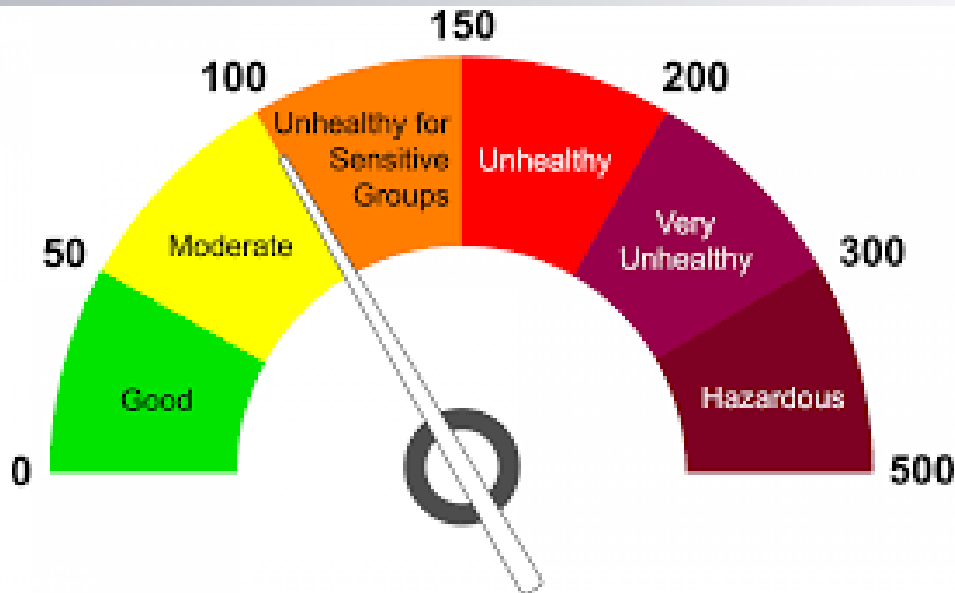


# Air Quality Index



In the US, the AQI measures 5 pollutants separately, with values ranging from 0-500+. The highest recorded pollutant (typically PM<sub>2.5</sub> for smoke) is reported on the AQI and reflects the most harmful pollutant in the air. The OSHA rule addresses particles that are 2.5 microns or smaller, or PM<sub>2.5</sub>. The other measured pollutants are CO, SO<sub>2</sub>, NO<sub>2</sub> and ozone.

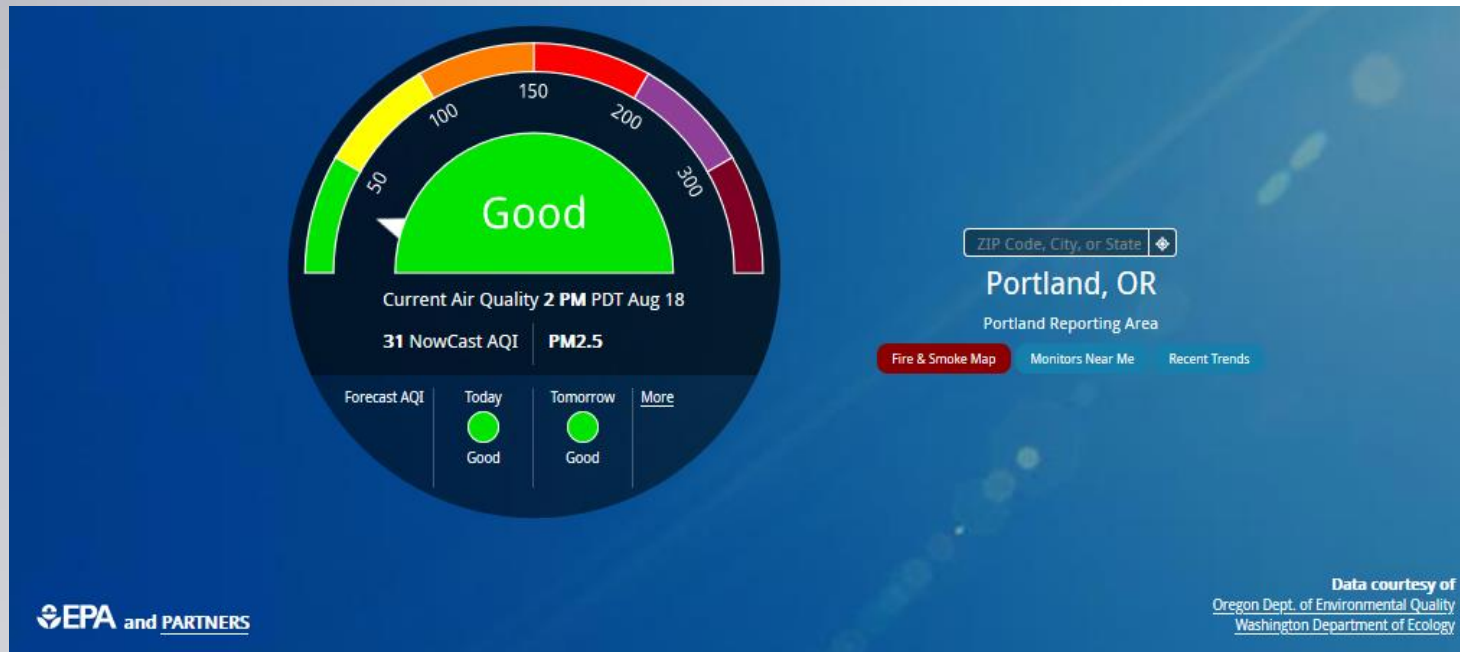
# Measuring AQI



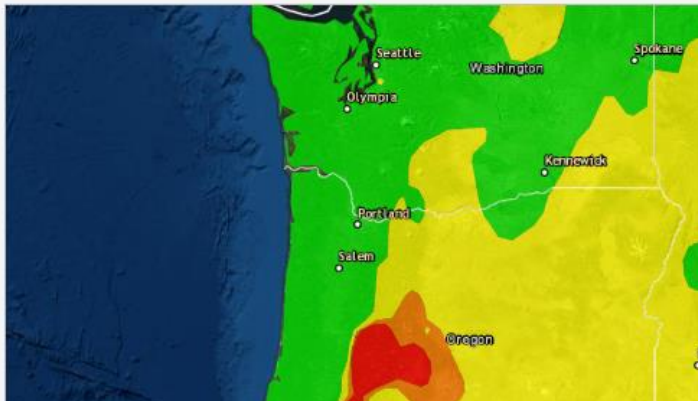
When the AQI reaches 101, the OSHA requirements take effect. Lewis & Clark will monitor the AQI via multiple platforms (PurpleAir, AirNow, DEQ) and has two reporting stations on campus that measure outdoor air quality. Portable monitors may also be used to measure indoor air quality.



# Monitoring AQI: AirNow.gov

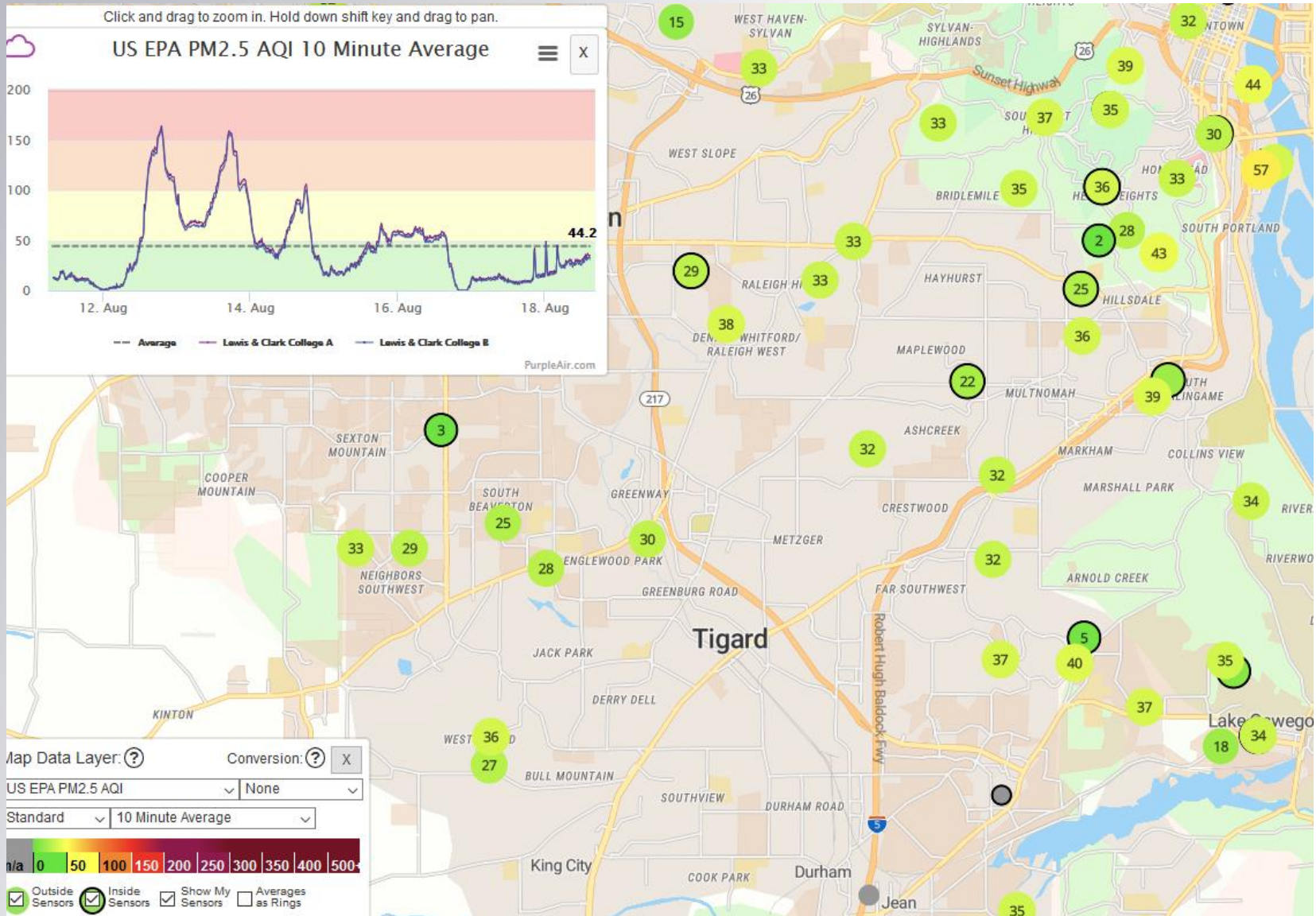


## Current Air Quality



Primary Pollutant		
This pollutant currently has the highest AQI in the area.		
▼	PM2.5	31 Good
Enjoy your outdoor activities.		
▶	OZONE	30 Good

# Monitoring AQI: PurpleAir.com



# OSHA AQI Threshold Requirements for Employers

- AQI 101-250
  - Assess and monitor AQI at all locations where employees may be exposed.
  - Provide and document an employee training program.
  - Implement notification and two-way communication systems.
  - Implement engineering and administrative controls when feasible to reduce employee exposure below AQI 251. These include providing enclosed buildings or vehicles with adequate air filtration, or altering work locations or schedules to provide ambient air with an AQI below 251.
  - Maintain a sufficient number of NIOSH-approved respirators that effectively protect wearers, such as N95 filtering facepiece respirators. These may be used on a voluntary basis at no cost to employees.

# OSHA AQI Threshold Requirements for Employers

- AQI 251-500
  - All provisions for AQI 101-250 must be implemented.
  - Employee use of NIOSH-approved respirators (N95 or better), which must be supplied by employer at no cost, is required. Fit testing and medical evaluation for these respirators are not required when used exclusively to protect against wildfire smoke, though employees must be trained in the proper use (putting on and removing, limitations of use, proper respirator care, and performing a seal check).

# OSHA AQI Threshold Requirements for Employers

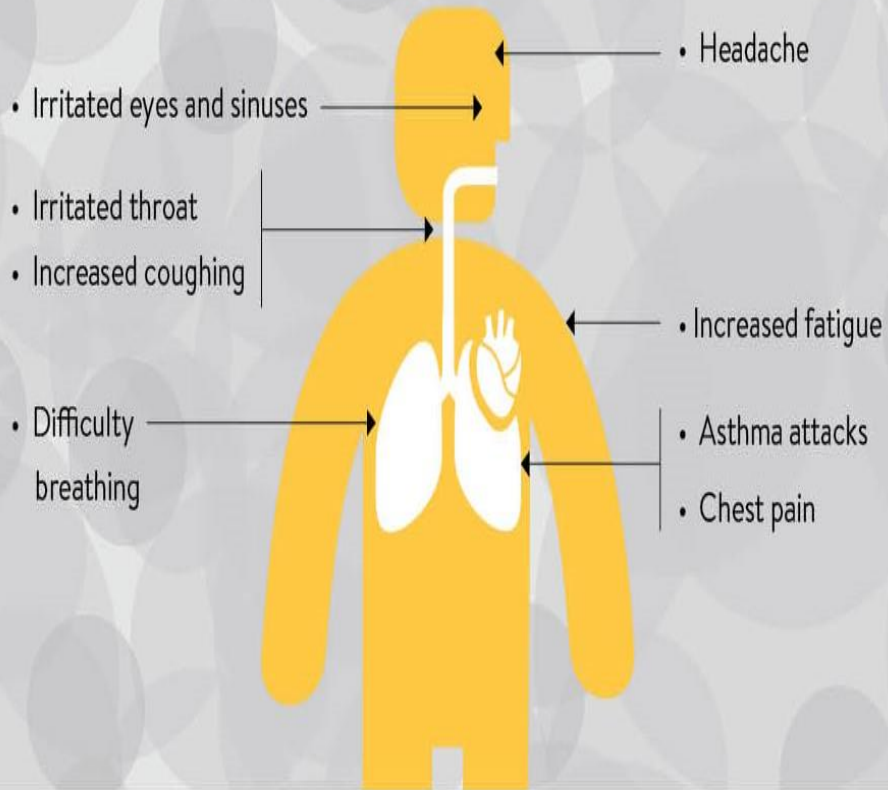
- AQI 501+
  - All provisions for AQI 101-500 must be implemented.
  - Employers must ensure that NIOSH-approved respirators (N95 filtering facepiece respirators or better) are available at no cost and worn by employees.
  - When the AQI is 501 or above, employees using filtering respirators for the sole purpose of protecting themselves from wildfire smoke must comply with LC's Respiratory Protection Program. Fit testing and a medical evaluation are required prior to respirator use under these conditions.



# Symptoms

## Wildfire Smoke Health Impacts

**Fine particles** (PM 2.5) pollution from wildfire smoke can cause:



Eyes may react to smoke exposure with a burning sensation, redness, and tearing caused by inflammation and irritation, which can lead to temporarily impaired vision.

Other symptoms may include runny nose, sore throat, difficulty breathing, sinus irritation, headache, fatigue, chest pain, and irregular heartbeat.

# Potential Health Effects



Although people have different sensitivity to smoke, everyone is at risk during heavy smoke incidents. Microscopic particles can lodge deep into lung tissue, which can cause a range of short- and long-term health concerns, including chronic heart and respiratory diseases, developmental issues in children, and possibly premature death.

# Sensitive Groups

Sensitive groups include those who may be more affected than others to hazardous smoke conditions and should take extra precautions to avoid or limit exposure. Higher sensitivity groups may include pregnant women, children, adults over age 65, or people:



- Who smoke or have lung disease such as asthma, COPD, bronchitis, or emphysema
- Infected or recovering from COVID, or with other respiratory infections
- With heart or circulatory conditions
- With diabetes
- Who have medical or health conditions that could be aggravated by exposure to wildfire smoke

# Respirators

A filtering facepiece respirator will filter most of the hazardous particulates in wildfire smoke.



Respirators **must** be NIOSH-approved (N95, N99, N100, R95, P95, or P100). For the 2022 wildfire season, KN95s previously approved under the FDA's [Emergency Use Authorization](#) that went into effect on June 29, 2021 **may not** be used for exposures under 500 AQI.

The numbers refer to filtration: N95 or KN95 respirators should filter at least 95% of airborne particles 0.3 microns in size, as well as larger and smaller particles. If the smoke is still causing airway irritation, consider using a different variety of respirator that fits better.

# Limitations of Respirators



Wearing a filtering facepiece respirator is helpful in protecting yourself from the harmful effects of wildfire smoke, though there are limitations to consider:

- Breathing can be more difficult, especially if you are unfamiliar with respirators.
- Those with existing heart or lung conditions should consult a doctor.
- The risk of heat illness could increase if you are physically active and the heat index is high.
- Facial hair may prevent the mask from creating a tight seal, preventing proper air filtration.
- [Video: How to Put on and Wear an N95 Respirator](#)



# Employee Rights

Employees have the right to report health issues, including those related to wildfire smoke exposure, and receive medical treatment if necessary. Employees who report health issues or obtain medical treatment must be allowed to do so without fear of retaliation. [Oregon law 654.062\(5\)](#)<sup>(6)</sup> protects employees who notify their employer or compliance agency about any workplace hazards or violations by prohibiting any form of retaliation by their employer.

If you need to report a hazard, please tell your supervisor or a safety committee member about the hazard. You can also contact the nearest Oregon OSHA office. You can do that in person, by letter, fax, telephone, or visit [osha.oregon.gov/workers](https://www.osha.oregon.gov/workers)

# Workplace Discrimination

If you think your employer has punished you because of your concern about safety or health conditions where you work, that is considered discrimination and it is against the law. You can file a complaint with the Civil Rights Division of the Bureau of Labor and Industries (BOLI) if you think your employer is discriminating against you.

Complaints alleging retaliation must be filed within 90 days of when the retaliation occurs. Filing a complaint begins by filling out an online [questionnaire](#) on their website. You may also call BOLI's Civil Rights Division at 971-673-0764 (English) or 971-673-2818 (Español).

# Emergency Procedures

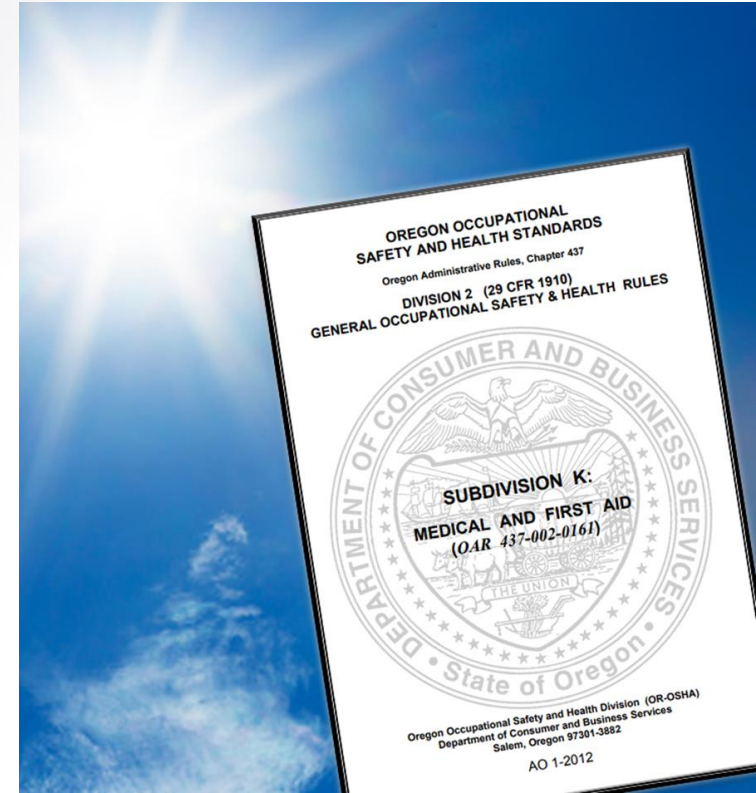
If you witness or experience a life-threatening condition, find help and call 911 immediately, followed by Campus Safety at 503-768-7777 if you are able. Follow the dispatcher's instructions to the best of your ability.

# Employer-Specific Plans

In addition to the Wildfire Smoke Prevention Plan, employers are also required to have in place:

- [Emergency Medical Plan](#)
- [Heat Illness Prevention Plan](#)

Employers are already required to have an Emergency Medical Plan. As wildfire smoke often occurs during periods of high heat, The Heat Illness Prevention rules may also be in effect.



# Community Notification

Notification will occur via the Rave Emergency Notification System, which will send a message to your designated email and text message platforms. The ENS has previously been used for campus closures.

Please make sure your contact information is current in WebAdvisor (for students) or Workday (for employees).



# Resources

- (1) <https://osha.oregon.gov/OSHARules/adopted/2021/temp-rule-protection-from-wildfire-smoke.pdf>
- (2) <https://www.airnow.gov/>
- (3) <https://oraqi.deq.state.or.us/>
- (4) <https://oregonsmoke.blogspot.com/2014/08/5-3-1-visibility-chart-helps-determine.html>
- (5) [https://www.oregonlegislature.gov/bills\\_laws/ors/ors654.html](https://www.oregonlegislature.gov/bills_laws/ors/ors654.html)
- (6) <https://osha.oregon.gov/workers/Pages/index.aspx>
- (7) <https://www.oregon.gov/boli/workers/Pages/complaint.aspx>
- (8) <https://osha.oregon.gov/news/2021/Documents/Non-NIOSH-Approved-Disposable-Filtering-Facepiece-Respirators-FDA.pdf>
- (9) <https://www.cdc.gov/niosh/topics/heatstress/heatapp.html>
- (10) <https://www.cdc.gov/niosh/npptl/pdfs/FacialHairWmask11282017-508.pdf>
- (11) [https://vimeo.com/583580321\\_N95\\_Video](https://vimeo.com/583580321_N95_Video)
- (12) <https://osha.oregon.gov/OSHARules/adopted/2021/temp-rule-protection-from-wildfire-smoke.pdf#page=2>
- (13) <https://osha.oregon.gov/Pages/az-index.aspx>
- (14) <https://osha.oregon.gov/consult/Pages/index.aspx>

# Other Resources

An excellent resource to utilize is the [A-Z Topic Index](#) on the Oregon OSHA website. It has lists of relevant publications, training materials, rules, interpretations, videos, and other miscellaneous materials.

If you want guidance in developing a safer work environment, you may consider our [free and confidential consultation service](#).

Our consultants in workplace health and safety can help you reduce accidents, related costs, and help you develop a comprehensive program to manage safety and health. For more information, please visit the consultation page.

# Knowledge Check

Thank you for taking the time to review this mandatory training. As this training is mandatory for all employees, please complete this [brief quiz](#) as a compliance record for the temporary OSHA standard.