

Policies



Metro

600 NE Grand Ave.
Portland, OR 97232-2736

Subject Wildfire Smoke Protection
Section Safety and Risk Management Division, Finance and Regulatory Services Department
Approved by Andrew Scott, Deputy Chief Operating Officer | Aug. 31, 2021

POLICY

Metro has implemented a Wildfire Smoke Prevention policy to prioritize employee safety during wildfire events and comply with the Oregon OSHA Temporary Rule on Protection from Wildfire Smoke.

APPLICABLE TO

All Metro departments and facilities where employees are or will be exposed to wildfire smoke where Air Quality Index is 101 or higher (Unhealthy for Sensitive Groups) (ambient air concentration for PM_{2.5} is at or above 35.5 ug/m³).

Not applicable:

- Enclosed buildings and structures in which the air is filtered by a mechanical ventilation system and personnel ensure that windows, doors, bays, and other exterior openings are kept closed, except when it is necessary to open doors to enter or exit, and
- Enclosed vehicles in which the air is filtered by a cabin air filter and the driver ensures that windows, doors, and other openings are kept closed, except when it is necessary to open doors to enter and exit.

DEFINITIONS

Air Quality Index: The Air Quality Index (AQI) was developed by the US Environmental Protection Agency (EPA) as an indicator of overall air quality and is based on the five criteria pollutants regulated under the Clean Air Act: ground-level ozone, particulate matter, carbon monoxide, sulfur dioxide, and nitrogen dioxide.

PM_{2.5} (Particulate Matter): Solid particles and liquid droplets suspended in air, known as fine particulate matter, with an aerodynamic diameter of 2.5 micrometers or smaller and measured in micrograms per cubic meter (ug/m³).

Sensitive Groups: People with pre-existing health conditions and those who are sensitive to air pollution who are among those likely to experience health problems from exposure to wildfire smoke. Examples of sensitive groups include: people with lung disease such as asthma or chronic obstructive pulmonary disease (COPD), including bronchitis and emphysema, and those who smoke; people with respiratory infections, such as pneumonia, acute bronchitis, bronchiolitis, cold, flu,

or those with or recovering from COVID-19; people with existing heart or circulatory problems, such as irregular heartbeat, congestive heart failure, coronary artery disease, angina, and those who have had a heart attack or stroke; children under 18 years old, and adults over age 65; pregnant women; people with diabetes; and people with other medical or health conditions which can be exacerbated by exposure to wildfire smoke as determined by a physician.

Wildfire Smoke: Emissions from unplanned fires in wildlands, which may include adjacent developed and cultivated areas to which the fire spreads or from where it originates.

Wildlands: Uncultivated and sparsely populated geographical areas covered primarily by grass, brush, trees, slash, or a combination thereof.

PROCEDURES

Metro facility and venue supervisors and managers shall ensure the implementation of the following procedures at their worksites:

1. Provide NIOSH approved respirators

Supervisors must maintain a sufficient number and sizes of NIOSH-approved N95 respirators at each work location where employees work outside for some or all of their work hours and may be exposed to wildfire smoke.

Note: For the 2021 wildfire season, KN-95s previously approved under the FDA's Emergency Use Authorization can be used to substitute for NIOSH-approved filtering facepiece respirators for exposures under 500.4 ug/m³ (AQI 500).

2. Monitoring Air Quality Index (AQI)

All Supervisors with employees that work outside for some or all of their shift, will:

- a. Monitor the AQI prior to the start of each shift and adjust operations accordingly.
- b. Monitor the AQI each day for the following work day to allow for adjustments to schedules and assure the ability to implement the requirements of this policy.
- c. Designate an employee during each work shift to monitor AQI for any changes that may require work adjustments according to this policy.

AQI can be monitored utilizing one of the methods listed in Appendix A.

3. Employee notification system

Metro's Emergency Management division will monitor regional smoke levels and send email notifications to managers and supervisors when the likelihood of employee exposure to wildfire smoke exists.

Managers and supervisors of employees who work outside for part or all of their shift, are responsible for notifying their employees when the following AQI levels are reached for their work location:

- AQI 101: Unhealthy for Sensitive Groups (PM2.5 is at or above 35.5 ug/m3)
- AQI 201: Very Unhealthy (PM2.5 is at or above 150.5 ug/m3)
- AQI 501 (PM2.5 is at or above 500.4 ug/m3)
- AQI (ambient air concentration for PM2.5) drops below levels requiring protective measures.

4. Employee concerns

Employees are encouraged to report any concerns regarding wildfire smoke to their immediate supervisor. This is especially true if any of the following occurs:

- Air quality improves and worsens; and
- When experiencing severe health symptoms that may be the result of wildfire smoke exposure such as asthma attacks, difficulty breathing, and chest pain.

5. Wildfire smoke guidance

During a wildfire event, Supervisors with employees that work outside for some or all of their shift must monitor the AQI and take actions as described below to protect personnel. Below are the required actions for various AQI levels.

AQI 101: Unhealthy for Sensitive Groups (PM2.5 is at or above 35.5 ug/m3) The following measures shall be implemented at each worksite when the AQI is at or above 101.

- Ensure respirators are readily available for voluntary use to all exposed personnel at their request.

AQI 201 Very Unhealthy (PM2.5 exposure to less than 150.5 ug/m3)

The following measures shall be implemented at each worksite when the AQI is at or above 201. If engineering and administrative controls not possible or adequate to reduce exposure to less than AQI 201, respiratory protection is required.

- a. Any requirements listed under AQI 101
- b. Engineering controls: Provide enclosed buildings, structures, or vehicles where the air is adequately filtered.
- c. Administrative controls
 - Relocate work to an outdoor location where the current ambient air concentration of PM2.5 is less than 150.5 ug/m3 (AQI 201)
 - Change work schedules to a time when ambient air concentration of PM2.5 is less than 150.5 ug/m3 (AQI 201).

- d. Respiratory Protection: Ensure that employees wear NIOSH-approved respirators (see Note above).

AQI 501 or above (PM2.5 is at or above 500.4 ug/m3)

- a. Any measures listed at AQI 201
- b. Ensure that employees wear NIOSH-approved respirators
- c. Implement a complete Respiratory Protection Program
See Appendix XX

Note: KN-95s cannot be used as a substitute for NIOSH-approved filtering facepiece respirators for exposures above 500.4 ug/m3 (AQI 500).

6. Wildfire smoke prevention training

Employees who may be exposed to a workplace ambient air concentration for AQI 101 or above (PM2.5 at or above 35.5 ug/m3) must receive training in wildfire smoke exposure and protections. The training provided shall include the following topics:

- Symptoms of wildfire smoke exposure, including:
 - Eyes: burning sensations, redness, and tearing of the eyes caused by irritation and inflammation of the eyes that can temporarily impair one's vision.
 - Respiratory system: runny nose, sore throat, cough, difficulty breathing, sinus irritation, wheezing, shortness of breath;
 - Fatigue, headache, irregular heartbeat, chest pain.
- The potential health effects of wildfire smoke, including increased risk of health effects to sensitive groups;
- The definition of sensitive groups as defined under the section (See Definitions);
- The employee's right to report health issues related to wildfire smoke exposure and obtain medical treatment for workplace exposure to wildfire smoke without fear of retaliation;
- How employees can obtain the current and forecasted ambient air concentration for PM2.5 and equivalent AQI level;
- The importance, limitations, and benefits of using a filtering facepiece respirator when provided by the employer, and how to properly put them on.
- The procedures the supervisor must follow if an employee exhibits severe symptoms of wildfire smoke exposure, including appropriate emergency response procedures;
- Employer's methods to protect employees from wildfire smoke;
- Employer's communication system for wildfire smoke hazards

RESPONSIBILITIES

Employees

- All employees are responsible for protecting themselves from wildfire smoke by following these guidelines for prevention and immediately reporting any signs or symptoms to their supervisor.
- Employees are required to participate in training as outlined in this policy.

Supervisors

- Shall ensure the implementation of this policy in the workplace
- Shall ensure the AQI is monitored during wildfire events
- Shall ensure there are adequate supplies of filtering facepiece respirators available

Department directors

Shall ensure resources are available to implement this policy

Safety and Risk Management Division

- Develops and maintains this policy
- Develops training and ensures personnel are trained in accordance with this policy
- Audits Metro worksite adherence to this policy

REFERENCES

Oregon OSHA Temporary Rule on Protection From Wildfire Smoke

29 CFR 1910.134 – Respiratory Protection

APPENDICES

Appendix A
Monitoring Air Quality

Appendix B
5-3-1 Index: Estimating visibility

Appendix C
Respiratory Protection Program: Wildfire Smoke Filtering Facepiece

APPENDIX A

Monitoring air quality

- a. Metro employees should primarily check the current ambient air concentration for PM2.5 from the U.S. EPA AirNow website; www.airnow.gov
- b. If AirNow is down or you need an alternate source, use:
 - Oregon Department of Environmental Quality’s air quality website; www.oregon.gov/deq/aq/pages/aqi.aspx (which directs you to <https://oraqi.deq.state.or.us/home/map>)
 - The Interagency Wildland Fire Air Quality Response Program using URL <https://tools.airfire.org/monitoring/v4/>
 - Cell phone – go to your app store and download; OregonAir

If the previous methods are not practical, use the 5-3-1 Visibility Chart to estimate the current air quality and corresponding AQI risk category (Appendix B).

Air Quality Index Levels of Health Concern	Numerical Value	Meaning
Good	0 - 50	Air quality is considered satisfactory, and air pollution poses little or no risk.
Moderate	51 - 100	Air quality is acceptable; however, for some pollutants there may be a moderate health concern for a very small number of people who are unusually sensitive to air pollution.
Unhealthy for Sensitive Groups	101 - 150	Members of sensitive groups may experience health effects. The general public is not likely to be affected.
Unhealthy	151 - 200	Everyone may begin to experience health effects; members of sensitive groups may experience more serious health effects.
Very Unhealthy	201 - 300	Health alert: everyone may experience more serious health effects.
Hazardous	> 300	Health warning of emergency conditions. The entire population is more likely to be affected.

APPENDIX B

5-3-1 Index: Estimating visibility

Determine the limit of your visual range by looking for distant targets or familiar landmarks such as mountains, mesas, hills, or buildings at known distances (miles). The visual range is that point at which these targets are no longer visible. As a general rule of thumb: if you can clearly see the outlines of individual trees on the horizon it is generally less than five miles away.

Ideally, the viewing of any distance targets should be made with the sun behind you. Looking into the sun or at an angle increases the ability of sunlight to reflect off of the smoke, and thus making the visibility estimate less reliable.

Once distance has been determined, follow this simple guide:

- If visibility is well over five miles, the air quality is generally good.
- Even if visibility is five miles away but generally hazy, air quality is moderate and beginning to deteriorate, and is generally healthy, except possibly for smoke sensitive persons. The general public should avoid prolonged exposure if conditions are smoky to the point where visibility is closer to the 5-mile range.
- If under five miles, the air quality is unhealthy for young children, adults over age 65, pregnant women, and people with heart and/or lung disease, asthma or other respiratory illness. These people should minimize outdoor activity.
- If under three miles, the air quality is unhealthy for everyone. Young children, adults over age 65, pregnant women, and people with heart and/or lung disease, asthma or other respiratory illness. These people should minimize outdoor activity.
- If under one mile, the air quality is unhealthy for everyone. Everyone should avoid all outdoor activities.

Using the 5-3-1 Visibility index

Distance you can see*	You are:		Or you have:
	<ul style="list-style-type: none">• An adult• A teenager• An older child	<ul style="list-style-type: none">• Age 65 and over• Pregnant• A young child	<ul style="list-style-type: none">• Asthma• Respiratory illness• Lung or heart disease
5 miles	check visibility	minimize outdoor activity	minimize outdoor activity
3 miles	minimize outdoor activity	stay inside	stay inside
1 mile	stay inside	stay inside	stay inside

* Less reliable under high humidity conditions

No matter how far you can see, if you feel like you are having health effects from smoke exposure, take extra care to stay inside or get to an area with better air quality. You should also see your doctor or other health professional as needed.

APPENDIX C

Respiratory Protection Program: Wildfire Smoke Filtering Facepiece

This appendix applies only to the required use of NIOSH-approved filtering facepiece respirators, including N95, P95, and R95, to be used by personnel for protection exclusively for wildfire smoke exposures when workplace ambient air concentrations of PM_{2.5} is at or above 150.5 ug/m³ (AQI 201) but below PM_{2.5} 500.4 ug/m³ (AQI 501).

Note: For the 2021 wildfire season, KN-95s previously approved under the FDA's Emergency Use Authorization can be used to substitute for NIOSH-approved filtering facepiece respirators for exposures under 500.4 ug/m³ (AQI 500).

Filtering facepiece respirators are disposable, negative-pressure, air purifying respirators where an integral part of the facepiece or the entire facepiece is made of air contaminant filtering material. This appendix does not apply to other types of respirators, including but not limited to elastomeric tight-fitting respirators, nor does it apply to situations where workers use filtering facepiece respirators for protection against air contaminants other than PM_{2.5} from wildfire smoke.

Personnel who are required to wear filtering facepiece respirators to protect against wildfire smoke exposures when workplace ambient air concentrations of PM_{2.5} is at or above 150.5 ug/m³ (AQI 201) must follow Metro's agency wide safety policy on; Respiratory Protection located on the MetroNet at the following location;

<https://metronet.oregonmetro.gov/services/Documents/Safety/Respiratory%20Protection.pdf>

Employee training

Employees wearing filtering facepiece respirators are trained in the proper use of the respirators. Training shall include the following topics:

- Putting on and removing filtering facepiece respirators
- Limitations on use
- How to care for the respirator
- The ability to demonstrate a seal check

Seal check

Each employee who uses a filtering facepiece respirator must perform a user seal check to ensure that the respirator is properly sealed to the face is achieved each time the respirator is put on. Either the positive or negative pressure checks listed in this appendix or the respirator manufacturer's recommended user seal check method must be used.

Positive pressure user seal check

Once you have properly donned the respirator, conduct the user seal check as follows:

- place your hands over the facepiece, covering as much surface area as possible
- exhale gently into the facepiece
- The face fit is considered satisfactory if a slight positive pressure is being built up inside the facepiece without any evidence of outward leakage of air at the seal.

Examples of evidence that it is leaking are as follows:

- the feeling of air movement on your face along the seal of the facepiece
- fogging of your glasses, or
- a lack of pressure being built up inside the facepiece.

Note: If the particulate respirator has an exhalation valve, then performing a positive pressure check may not be possible. In such cases, a negative pressure check must be performed.

Negative pressure user seal check

- Negative pressure seal checks are typically conducted on particulate respirators that have exhalation valves. To conduct a negative pressure user seal check as follows;
- Cover the filter surface with your hands as much as possible and then inhale
- The facepiece should collapse on your face and you should not feel air passing between your face and the facepiece.

Correcting problems discovered during the seal check

In the case of either type of seal check (positive or negative), if air leaks around the nose, use both hands to readjust the nosepiece by placing your fingertips at the top of the metal nose clip. Slide your fingertips down both sides of the metal strip to more efficiently mold the nose area to the shape of your nose. Readjust the straps along the sides of your head until a proper seal is achieved.