

Wildfire Smoke Exposure Control Program

University of Oregon

I. INTRODUCTION

Wildfire Smoke collects in the Southern Willamette Valley based on locations of wildfires combined with weather patterns. These events are not of a controllable nature; however, they can be foreseen and many of the resulting impacts can be preventatively mitigated.

This program is intended to provide consistent standards for wildfire smoke intrusion within University of Oregon (UO) owned and occupied facilities, in compliance with OAR 437-002-1081. The primary objective is to prevent injury or illness within the University community, and to protect University assets from resultant damages. This program establishes guidelines for departments and staff focusing on AQI action levels, building operations during periods of smoke intrusion, indoor & outdoor work parameters, hazard communications, and monitoring during events.

II. SCOPE

This program applies to UO employees and UO owned or occupied facilities. Certain operations and activities are exempt from this program:

- Employees working inside enclosed structures or vehicles provided with a mechanically filtered ventilation system, and with openings kept closed except as necessary for entry and exiting.
- Employees working at home.
- Affected employer operations that are suspended to prevent employee exposure.
- Work activities with intermittent employee exposure, individually <15 minutes in duration and <60 minutes total per 24-hour period.
- Certain emergency operations.

III. RESPONSIBILITIES

Environmental Health and Safety (EHS) is responsible for administrative oversight of this written program, employee training materials, air quality monitoring, and support to loss control efforts during and after a smoke intrusion event.

Safety and Risk Services (SRS) maintains listings of supervisors known to have exposed employees. During wildfire season and as relevant AQI thresholds are crossed, SRS immediately communicates to those supervisors regarding changing conditions and requirements.

Units, Departments, Supervisors, and Employees are responsible for implementation of actions to protect personnel as specified by this program.

Facility maintenance and operations departments are responsible for implementing protective building systems' operations as specified by this program.

IV. AIR MONITORING

Regional air monitoring is conducted by federal, state and local environmental regulatory authorities. SRS AQI Notifier (Canary) notifies SRS staff when AQI crosses action thresholds.

Site-specific air monitoring may be conducted by trained technicians with direct read meters, including particulate in at least the PM 2.5 size range. Monitoring is conducted as triggered by AQI's as described in section V. ACTION LEVELS. Air monitoring is conducted, prioritized, and data interpreted as follows.

A. Site-specific monitoring methodology:

- 1) Meters are calibrated to measure particulates in at least the PM2.5 size range. Larger particle sizes may also be considered, if a limitation of the field measurement device, but shall be consider PM2.5 and smaller for the purposes of this program.
- 2) Meters are factory calibrated as recommended by the device manufacturer.
- 3) Meters are field calibrated daily according to the manufacturer's recommendations.
- 4) Technicians are trained and knowledgeable regarding use of the equipment.
- 5) Data will be shared as requested with university partners, subject to section IX. RECORDKEEPING. Monitoring records include the date and time of assessment, location assessed, PM2.5 concentration, person making the assessment, and assessment method.

B. Locations selected for monitoring are based on the following prioritization schedule at the discretion of EHS and/or the Incident Management Team (IMT):

- 1) Protection of the health & safety of university students, faculty, staff, and other users of university facilities.
- 2) Protection of university assets, including property and research.

V. ACTION LEVELS & EXPOSURE ASSESSMENT

Air Quality Index (AQI) is described in the following table using information provided by the US Environmental Protection Agency (EPA).

Level of Concern	AQI Range	Description of Air Quality
Good	0 – 50	Air quality is satisfactory, and air pollution poses little or no risk
Moderate	51 – 100	Air quality is acceptable. However, there may be a risk for some people, particularly those 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 less likely to be affected.
Unhealthy	151 – 200	Some members of the general public may experience health effects; members of sensitive groups may experience more serious health effects.
Very Unhealthy	201 – 300	Health Alert: The risk of health effects is increased for everyone

Level of Concern	AQI Range	Description of Air Quality
Hazardous	>300	Health warning of emergency conditions: everyone is more likely to be affected.

A. The actionable AQI is determined as follows:

- 1) As provided by AirNow (www.airnow.gov) for the zip code where UO facilities reside. Next-day forecast AQI is used after 2pm daily during wildfire season to initiate proactive operational changes for UO facilities and associated messaging to UO employees.
- 2) As provided by a local or state regulatory agency when that agency has deployed calibrated instruments to monitor site conditions at specific UO facilities or events.
- 3) Additionally, AQI may be determined based on PurpleAir sensors with region-specific correction factor, the [5-3-1 Visibility Chart](#), or using the table for PM2.5 field measurements.

PM2.5 ($\mu\text{g}/\text{m}^3$)	AQI Range (PM2.5)
0 – 12	0 – 50
12.1 – 35.4	51 – 100
35.5 – 55.4	101 – 150
55.5 – 150.4	151 – 200
150.5 – 250.4	201 – 300
250.5 – 500.4	301 – 500

B. The following actions are implemented to protect outdoor and indoor workers, and to preserve building systems. In order to minimize fluctuating operations throughout the day, the operational stance for the highest anticipated AQI may be used to set the day’s operations. Additionally, in periods of fluctuating outdoor conditions, it may be determined that a return to normal operating conditions will not occur until improved outdoor conditions have demonstrated stability. Refer to Table 1 – AQI Action Levels in the Appendix for additional information.

- 1) $\text{AQI} \leq 100$ – Good & Moderate – No mitigation actions.
- 2) $\text{AQI} \geq 101$, $\text{AQI} \leq 250$ – Unhealthy for Sensitive Groups, Unhealth, and Very Unhealthy
 - a. Provide a notification to the campus community that a wildfire smoke intrusion event exists. Provide a reminder of the steps taken if the event worsens. Include a reminder that all building doors and windows are required to be closed except for entry or exit.
 - b. Provide exposed employees with the information indicated in section VII. TRAINING; Provide for effective two-way communication between exposed employees and their supervisors; and, **either** implement engineering and administrative controls to reduce employee exposures below AQI 101 **or** provide for exposed employee access to a NIOSH-approved filtering face piece respirator for voluntary use.
 - c. EHS implements daily monitoring of PM2.5 particulate concentrations. See IV. AIR MONITORING for additional information.

- d. Where possible, building HVAC Systems are turned to Smoke Mode. See section VI. BUILDING OPERATION for additional information.
 - i. Consider implementation of portable air scrubbers in facilities critically sensitive to indoor air quality.
- 3) $AQI \geq 251$, $AQI \leq 500$ – Very Unhealthy
 - a. Exposed employees are required to be provided and are required to use a NIOSH-approved filtering face piece respirator following provisions of the Wildfire Smoke Respiratory Protection Program, Appendix A of OAR 437-004-9791.
- 4) $AQI > 500$ – Hazardous
 - a. Exposed employees are required to be provided and are required to use a NIOSH-approved respirator following all provisions of the UO Respiratory Protection Program and OAR 437-004-1041.
 - b. Campus closures may be implemented according to Inclement Weather protocols.
- C. Recommendations for the general public at activities and events impacted by wildfire smoke are provided in Appendix B: [University of Oregon Recommendations for Managing Wildfire Smoke Impacts to General Public](#).
- D. Operation of Intercollegiate Athletics events during Wildfire Smoke Events follows applicable Oregon OSHA workplace requirements, and specific NCAA conference and UO Department of Athletics rules and requirements.

VI. BUILDING OPERATION

The following section addresses management of UO facilities in preparation of and during wildfire smoke events.

- A. Facility engineering departments responsible for building HVAC systems shall assess building's existing and available control strategies. Review includes:
 - 1) Nature and Type of HVAC filtration (e.g. MERV rating, filter type)
 - 2) Nature and Type of HVAC system controls (e.g. manual, programmable, remote)
 - 3) Limitations of HVAC system adjustments based on building use. For example, laboratory HVAC systems require 100% outside air.
- B. Where feasible during wildfire smoke events, facility maintenance and operations staff should implement HVAC operation protocols to minimize introduction of outside air and maximize the recirculation of indoor air. These protocols are activated as indicated in V. ACTION LEVELS & EXPOSURE ASSESSMENT.
- C. In extreme conditions, the Campus Incident Management team may require temporary HVAC shutdown and/or building closures.

It is understood that University buildings utilize a variety of ventilation systems with varying control capabilities. Appendix C provides a listing of academic and administrative buildings on the Eugene campus having filtered mechanical ventilation systems and identifies those in which HVAC control procedures described in item VI.B. are implemented.

VII. TRAINING

During wildfire smoke events, exposed employees shall be provided with the information on the symptoms and health effects of wildfire smoke exposure, mechanisms of personal protection, mechanisms of accessing current local air quality, mechanisms of two-way communication, and mechanisms of reporting and treating work-related illness or injury. Training is required before performance of the work incurring the exposure, and annually thereafter for exposed employees. Supervisors are responsible for ensuring employees are trained and that documentation of training is retained.

Training content and materials are made publicly available on the Human Resources and Safety and Risk Services websites:

<https://safety.uoregon.edu/wildfire-smoke>

<https://safety.uoregon.edu/injury-reporting>

<https://hr.uoregon.edu/about-hr/campus-notifications/inclement-weather/inclement-weather-air-quality-issues>

VIII. RECORDKEEPING

Training records are retained in university learning management systems, or in departmental records.

Records created in accordance with this program are maintained and accessed according to applicable records retention regulations and university policy.

IX. DOCUMENTATION

Original Preparation Date: August 10, 2021
 Latest Revision Date: November 20, 2023
 Latest Revision Number: 4

X. APPENDIX

Appendix A – [Mandatory Workplace Guidance for the Use of Filtering Facepiece Respirators to address Wildfire Smoke, OAR 437-002-1081 Appendix A](#)

Appendix B – [University of Oregon Recommendations for Managing Wildfire Smoke Impacts to General Public](#)

Appendix C – Building Filtered Mechanical Ventilation Systems (Eugene Campus)

University buildings with filtered mechanical ventilation systems	
Building air recirculation mode	Building air is not recirculated
Anstett	1600 Millrace
Allen	1715 Franklin
Berwick	1900 Millrace
Casanova	38 NW Davis, PDX
Central Power Station	510 Oak
Chapman	Baker Downtown Center
Chiles Business Center	Black Cultural Center
Clinical Services Building	Carson
Computing Center	Central Kitchen
Deschutes	Collier House
Ford Alumni	CPFM Administration
Frohnmayr Music	EC Cares
Gerlinger Annex	Fenton
Hatfield-Dowlin	Huestis
Jaqua Center	Klamath
Jordan Schnitzer Museum	Knight Campus Building 1
Knight Law	McArthur Court
Knight Library	Olum Childrens Center
Lillis	Onyx Bridge/EHS
Lokey Education	Pacific
Matthew Knight Arena	PeaceHealth North
McKenzie	PSC/Science Library
Miller Theatre	Rainier
Moss Childrens Center	Streisinger
Museum Natural & Cultural History	Thompson's University Center
Oregon	Transportation Services
Peterson	UOPD East Station
PLC	Residence Hall common spaces
Straub	*Specific areas in buildings not listed may be served locally by mechanically filtered air conditioning systems.
Student Rec Center	
University Health Services	

XI. REFERENCES

[OAR 437-002-1081 Protection from Wildfire Smoke](#)

Oregon Health Authority, Wildfires and Smoke.

<https://www.oregon.gov/oha/PH/Preparedness/Prepare/Pages/PrepareForWildfire.aspx#health>.

Accessed December 28, 2020.

Air Now. AQI Basics. <https://www.airnow.gov/aqi/aqi-basics/>. Accessed December 7, 2020