

DOSH DIRECTIVE

Department of Labor and Industries
Division of Occupational Safety and Health
Keeping Washington safe and working

8.20

Wildfire Smoke Exposure

Date: May 7, 2024

I. Purpose

This Directive establishes inspection procedures and enforcement policies related to wildfire smoke exposure rules, [WAC 296-820](#) and WAC 296-307-098.

II. Scope and Application

This Directive applies to all DOSH operations statewide. This Directive provides enforcement guidance for WAC 296-820 and WAC 296-307-098, and replaces all previous instructions on this issue. Supplementary guidance may be found on the DOSH [Wildfire Smoke topic page](#).

III. References

- [WAC 296-820, Wildfire Smoke](#)
- [WAC 296-307-098, Wildfire Smoke](#)
- WA Department of Ecology Air Quality Monitoring Network:
 - Interactive map <https://enviwa.ecology.wa.gov/home/map>
 - Reports: <https://enviwa.ecology.wa.gov/Report/MatrixReportNew>
- U.S. Environmental Protection Agency (EPA) Fire and Smoke Map: <https://fire.airnow.gov/>

IV. Background

Wildfire smoke exposure is increasing in frequency and intensity, presenting health risks to workers. After the historic 2020 wildfires, L&I received and accepted a petition for rulemaking on this topic. When the particulate matter (PM_{2.5}) in wildfire smoke is inhaled, it can reach the deepest parts of the lungs and cause serious health problems.

V. Enforcement Policies

A. Citing and Classifying Violations

1. All violations shall be classified and cited according to the policy and procedure for classifying violations found in Chapter 5 of the DOSH Compliance Manual. Special attention shall be given by each CSHO, supervisor, and Regional

Compliance Manager, to ensure that all violations identified are properly classified and that each violation determined to be serious has an appropriate penalty assigned.

2. Exposure to PM_{2.5} can result in many health effects including, but not limited to: difficulty breathing, reduced lung function, wheezing, bronchitis, worsening of asthma, heart failure, and early death.
3. Exposures to PM_{2.5} of 35.5 µg/m³ (AQI 101) and higher are recognized to be “unhealthy for sensitive groups”. Outdoor workers are considered sensitive groups by the Washington State Dept. of Health, Dept. of Ecology, the EPA and DOSH due to increased exposure time, and increased breathing rates compared to the general public. Violations that occur when employees are exposed to a PM_{2.5} concentration of 35.5 µg/m³ (AQI 101) and higher should be cited as a serious violation.

B. Determining whether elevated PM_{2.5} is due to wildfire smoke.

Wildfire smoke is a complex mixture of particles and gases. Fine particulates, such as PM_{2.5}, are the primary pollutant of public and occupational health concern. However, PM_{2.5} may be generated by sources other than wildfire smoke, including automobiles, residential wood stoves, and firework displays. Based on currently available historical data, the PM_{2.5} thresholds in the rule will rarely be reached during wildfire season unless wildfire smoke is a contributing factor.

If an inspector becomes concerned that the PM_{2.5} may be due to exposures other than the presence of wildfire smoke, all of the following steps should be taken:

1. If the employer is using the EPA’s Air Quality Index (AQI) instead of the PM_{2.5} concentration, the inspector should verify that the AQI is not elevated due to other pollutants, such as PM₁₀ or ozone.
2. Use the EPA’s fire and smoke map to determine if there are fires in proximity to the worksite or if there is an indication of smoke in the region of the worksite. Be aware that smoke can travel thousands of miles.
3. Consult local news media for reports of wildfire smoke in the vicinity.

If wildfire smoke appears to be contributing to the elevated PM_{2.5}, the inspector should cite WAC 296-820 or WAC 296-307-098 as appropriate.

C. Prescribed burns.

Smoke from both planned and unplanned fires present a health hazard to exposed workers, and are covered by the scope of the wildfire smoke rule. If workers are exposed to smoke from prescribed burns at or above the thresholds in the wildfire smoke rules, employers must implement the protections in the wildfire smoke rules.

However, workers are not covered by the protections in the wildfire smoke rules during the time they are actively performing prescribed burns.

D. Determining whether PM_{2.5} thresholds have been exceeded using historical data.

In the identification of harmful exposures sections of the wildfire smoke rules (WAC 296-820-815 and 296-307-09815), employers may choose to obtain PM_{2.5} from various publicly available sources listed in the rule, or may use direct reading instruments to determine the PM_{2.5}.

Employers that choose to use publicly available data do not have to keep records of the PM_{2.5} at their worksite, as this historical data is readily available. Non-agricultural employers that choose to conduct their own PM_{2.5} monitoring must comply with the exposure recordkeeping requirements in WAC 296-802.

Employers are required to designate their method of determining PM_{2.5} levels in their wildfire smoke written program per WAC 296-820-820(2)(e) and 296-307-09820(2)(e).

If an inspector needs to determine whether a PM_{2.5} threshold has been exceeded, the inspector should first consult the employer's written program to identify the employer's method of determining PM_{2.5}, including data source, monitoring sites used, and whether hourly PM_{2.5} or NowCast AQI was used.

If the employer used publicly available PM_{2.5} data, the inspector should do the following to verify exposures:

1. Navigate to the Department of Ecology's Air Monitoring Network website, select the "Reports" tab, and select "Matrix" from the drop down list:
<https://enviwa.ecology.wa.gov/Report/MatrixReportNew>
2. Use the following selections based on the data needed:
 - **Select Purpose:** "Smoke Network"
 - **Select County:** (Narrow by County if desired)
 - **Select Owner:** "All"
 - **Select Site:** Select the monitoring sites used by the employer. Additional nearby monitoring sites may be selected to provide additional context.
 - **Select Monitors:** Select from the following types:
 - BAM_PM25
 - BAM_PM25_2
 - EPM25_corrected
 - NPM25
 - NPM25_2
 - **Exceedance Low/High:** Leave at defaults.
 - **Select Report View:** Choose "Table" or "Graph" to quickly view results. Select "Excel" to download data.
 - **Select Period:** Specify desired start and end date.

- **Type:** “Average”
 - **From/To Time Base:** “1 Hour”
3. Download the data in Excel format and save to the inspection file.
 4. Determine whether the PM_{2.5} thresholds in the rules have been exceeded.

If the employer uses the NowCast AQI for PM_{2.5} to determine exposures, follow these steps in addition to those above:

1. Navigate to the Department of Ecology’s Air Monitoring Network website, select the “Interactive Map” tab, and select the desired monitoring site from the drop down list: <https://enviwa.ecology.wa.gov/home/map>
2. A box displaying the AQI at that site will appear. Select the desired date.
3. Click the Excel button to export excel file with the NowCast AQI data for the selected date.
4. Repeat these steps for every location and date where AQI data is needed.

Updated Air Quality Index (AQI) values:

The EPA updated the AQI on May 6th, 2024. The PM_{2.5} thresholds in the rule were not changed. L&I will be updating the allowed AQI values listed in the rule. Employers may use the updated AQI levels listed in the table below in lieu of the AQI values listed in the rule.

Current PM _{2.5}	NowCast Air Quality Index for PM _{2.5} (AQI)
20.5 µg/m ³	72
35.5 µg/m ³	101
250.5 µg/m ³	351
500.4 µg/m ³	849
555 µg/m ³	957

Notes:

- Publicly available data from community provided sensors, such as PurpleAir sensors, may not be used for citation purposes.
- Occasionally, monitoring data may be missing. If no monitoring data is available at the closest monitor, the inspector may be able to use nearby monitors to estimate the exposure.
- It is expected for some monitors to display negative PM_{2.5} at low concentrations. Occasionally, there may be outliers in publicly-available monitoring data. Contact DOSH IH Technical Services for assistance if there are questions about data validity.

- Employers may use the L&I PM_{2.5} map to determine the current PM_{2.5}. The L&I PM_{2.5} map uses data from the WA Department of Ecology monitors.
- The WA Department of Ecology, L&I, and the EPA share data sources. However, Ecology provides the most up-to-date publicly available data.

E. Emergency Response

The wildfire smoke rules define emergency response in WAC 296-820-810(3) and 296-307-09810(3). For questions about whether specific operations meet the definition of emergency response, contact DOSH Technical Services. When respirator use is required under WAC 296-820-840 and 296-307-09840, employers conducting emergency response must implement the required use of respirators to the extent feasible. To evaluate feasibility, inspectors should consider the following:

- Whether the required use of respirators would constitute a greater hazard to workers. For example, utility workers conducting emergency response work exposed to the hazard of arc flash cannot safely wear respirators that are not appropriately rated.
- If applicable, the availability of respirators that could mitigate the greater hazard posed. For the example above, there may be respirators that are rated for use with arc flash hazards.
- Technological feasibility (i.e. can respirators be used in the work situation under consideration?).
- Economic feasibility would typically not be a consideration in this case.
- If respirator use is not feasible during certain tasks, are they still used during tasks where it is feasible?

F. Voluntary Use of Respirators

Voluntary use of respirators under the wildfire smoke rules is distinct from voluntary use of respirators under WAC 296-842 for several reasons:

- Under typical voluntary use circumstances, the employer is not required to provide respirators for voluntary use. Under the wildfire smoke rules, respirators must be provided by the employer based on the current PM_{2.5}.
- Under typical voluntary use circumstances, there is no hazard present. Voluntary use of respirators under the wildfire smoke rules occur at PM_{2.5} levels that pose a hazard to employees.

The wildfire smoke rules have two “thresholds” for voluntary use. At each threshold, the steps the employer must take are distinct. To evaluate whether the employer’s responsibility has been met, use the guidance below:

- At 35.5 µg/m³ PM_{2.5} (101 AQI), employers must make N95 filtering face-piece respirators available for voluntary use. Respirators can either be directly distributed to each employee, or supplied at each work location and readily accessible to employees. If the employer has a sufficient supply of respirators on hand for the staff at the work location and employees, when interviewed, are

aware of the location of, and have access to, the respirators, the employer has met their responsibility to make respirators available. Employees are not required to wear respirators, or be clean shaven at this threshold.

- At $250.5 \mu\text{g}/\text{m}^3$ $\text{PM}_{2.5}$ (351 AQI), employers must directly distribute N95 filtering face-piece respirators to each employee. “Directly distribute” means each employee has personally been handed a respirator for use. Employees are not required to wear respirators at this threshold, nor are they required to keep the respirator provided to them on their person. To evaluate whether the employer has met their responsibility at this threshold, employee and employer interviews should assess whether respirators were appropriately distributed if the presence of respirators is not directly observable.

The provisions of mandatory use of respirators under WAC 296-842 (e.g. medical evaluations, fit-testing, etc.) do not apply to the voluntary use of N95 filtering-facepiece respirators under the wildfire smoke rules.

G. Mandatory Use of Respirators

Where the current $\text{PM}_{2.5}$ is $555 \mu\text{g}/\text{m}^3$ (AQI 957) or higher, respirators with an assigned protection factor (APF) of 25 or higher are required. Air-purifying respirator must be equipped with P100 filters. HEPA filters are an acceptable alternative to P100 filters.

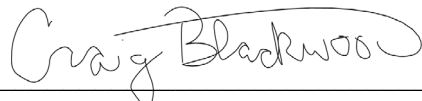
Note: N95 and half-face respirators have an APF of 10, and do not provide enough protection at a $\text{PM}_{2.5}$ of $555 \mu\text{g}/\text{m}^3$ (AQI 957) or higher.

VI. Point of Contact

If DOSH staff have questions, or need additional guidance or interpretive assistance, they are encouraged to contact the wildfire smoke technical specialist in DOSH IH Technical Services.

VII. Review and Cancellation

DOSH will review this Directive for applicability on an “as needed” basis, and it will remain effective until superseded or canceled.

Approved: 

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Division of Occupational Safety and Health