

Preventing Occupational Injuries and Illness due to Wildfire and Heat in Oregon

Wildfires and extreme heat events in Oregon are increasing in frequency, duration and intensity. Outdoor workers are at high risk of morbidity and mortality from wildfires and extreme heat. In 2020, Oregon Governor Kate Brown issued an Executive Order (EO 20-04) directing Oregon Health Authority (OHA) and the Oregon Occupational Safety and Health Administration (OR-OSHA) to jointly develop a proposal for standards to protect workplace employees from exposure to wildfire smoke and excessive heat.

The Challenge

The intensity and frequency of extreme heat events are increasing due to climate change.¹ Agricultural workers have a 35-fold greater risk of heat-related death than the average worker.² The summer of 2021 was the warmest in Oregon's recorded history. During 2021, 3 workers died from exposure to extreme natural heat (2 confirmed as heat-related; in one case, "environmental heat could not be confirmed or eliminated as contributing to his death"). In 2021 there was a 242% increase in overall heat-related illness visits to emergency departments and urgent care centers in Oregon compared to 2020.

OR Heat Index Days (May-Sep)	2020	2021	2022	2023
HI ≥80F	124	132	117	133
HI ≥90F	63	74	75	66

The average annual outdoor worker person-days of heavy smoke exposure has increased 332% in Oregon when comparing the period from 2011-2015 to 2017-2021.³ Limited resource capacity for outreach and response efforts can lead to equity and inclusion challenges for those who may lack the ability to access heat and wildfire smoke protections. as it.

The Response

OR-OSHA adopted [new administrative rules](#) protecting workers from heat and wildfire smoke. The heat rule became effective June 15, 2022 and applies to outdoor and indoor work activities where the heat index equals or exceeds 80 degrees Fahrenheit. [Rules](#) addressing labor housing occupant exposure to high ambient temperatures also became effective June 15, 2022.

Wildfire smoke [rules](#) became effective July 1, 2022. The rules apply to employers whose employees are—or will be—exposed to wildfire smoke where the ambient air concentration for fine particulate matter equals or exceeds 35.5 micrograms per cubic meter (Air Quality Index (AQI) value of 101).

OHA Occupational Public Health Program (OPHP) staff served on the heat and smoke rules advisory committees (RACs). OPHP provided subject matter expertise during the rulemaking process and presented on the health impacts of heat and wildfire smoke exposure on Oregon workers.

The Impact

There were no confirmed occupational heat-related deaths in 2022 or 2023 in Oregon despite high heat days in 2022 comparable to 2021: 75 days with the heat index exceeding 90°F in 2022 and 74 in 2021, with fewer days in 2023 (66). One Federal employee death in 2024, a US Forest Service firefighter, is currently under investigation by Federal OSHA. Temperatures in the area on that day (July 9, 2024) reached 107°F.

In 2024, the Oregon Health & Science University-OHA Occupational Public Health Program began an evaluation of the effectiveness and impact of the new heat and smoke rules in protecting worker health. To date, the evaluation project has identified partners and conducted interviews to gather insights on roles, experiences and recommendations. The evaluation process also sought to identify potential gaps related to effectiveness, clarity, implementation, resources and enforcement of the rules. Interviews were conducted with representatives of the following groups: worker advocates, agriculture and construction industry, worker's compensation insurer, academia and OR-OSHA. Challenges with implementation and enforcement were identified by multiple partners. Lack of a Federal OSHA heat rule was a challenge identified for the maritime industry, which is not under OR-OSHA jurisdiction. A key technology gap exists for more air monitoring stations generally and portable monitors for accurate measurements in microclimates where workers are located. The need for additional employee education opportunities and improved language translation materials are key gaps in resources identified for both the heat and smoke rule implementation. Rule enforcement remains challenging due to many factors, including inconsistent compliance across workplaces, which results in workers continuing to work in hazardous conditions.

For more information:

OR-OSHA Heat and Wildfire Smoke Rule summaries:

<https://osha.oregon.gov/OSHARules/adopted/2022/heat-wildfire-smoke-rule-summary-2022.pdf>

OR-OSHA rules addressing employee and labor housing occupant exposure to high ambient temperature:

<https://osha.oregon.gov/OSHARules/adopted/2022/ao3-2022-text-alh-heat.pdf#heatlaborhousing>

OR-OSHA's permanent rules for protection from wildfire smoke — revised May 2024

<https://osha.oregon.gov/OSHAPubs/factsheets/fs92.pdf>

OR-OSHA's [Program Directive A-231](#): Jurisdiction: independent contractors, limited liability corporations (LLCs), partnerships, corporate officers, and corporate family farms.

Occupational Fatalities in Oregon Annual Reports <https://www.ohsu.edu/oregon-institute-occupational-health-sciences/occhealthsci-annual-reports>

References:

1. Fleishman E. Sixth Oregon climate assessment. Oregon Climate Change Research Institute [Internet]. 2023 January [cited 2025 September 12]. Available from: <https://blogs.oregonstate.edu/occri/oregon-climate-assessments>
2. Gubernot DM, Anderson GB, Hunting KL. Characterizing occupational heat-related mortality in the United States, 2000-2010: an analysis using the Census of Fatal Occupational Injuries database. *Am J Ind Med*. 2015 Feb;58(2):203-11. doi: 10.1002/ajim.22381. PMID: 25603942; PMCID: PMC4657558.
3. Lappe, Brooke and Vargo. 2022. "Disruptions from Wildfire Smoke: Vulnerabilities in Local Economies and Disadvantaged Communities in the U.S." Federal Reserve Bank of San Francisco Community Development Research Brief 2022-06. doi: 10.24148/cdrb2022-06.