



Oregon

Kate Brown, Governor

Department of Consumer and Business Services
Oregon Occupational Safety & Health Division (Oregon OSHA)
350 Winter Street NE, PO Box 14480, Salem, OR 97309-0405
Phone: 503-378-3272, Toll Free: 1-800-922-2689, Fax: 503-947-7461
osha.oregon.gov

January 28, 2022

Rules to Address Employee and Labor Housing Occupant Exposure to High Ambient Temperatures

Hearing Date	Time	Location	Hearings Officer
February 23, 2022	6:00 pm	Oregon OSHA, Salem	Lisa Appel
Please register for Rules to Address Employee and Labor Housing Occupant Exposure to High Ambient Temperatures on Feb 23, 2022 6:00 PM PST at: https://attendee.gotowebinar.com/register/7909938747759508747			
February 24, 2022	6:00 pm	Oregon OSHA, Salem	Lisa Appel
Please register for **Spanish-only** Rules to Address Employee and Labor Housing Occupant Exposure to High Ambient Temperatures on Feb 24, 2022 6:00 PM PST at: https://attendee.gotowebinar.com/register/5539264134925975054			
February 25, 2022	10:00 am	Oregon OSHA, Salem	Lisa Appel
Please register for Rules to Address Employee and Labor Housing Occupant Exposure to High Ambient Temperatures on Feb 25, 2022 10:00 AM PST at: https://attendee.gotowebinar.com/register/2402892923043799051			

After registering, you will receive a confirmation email containing information about joining the webinar. In order to ensure as many people as possible are able to testify, Oregon OSHA reserves the right to restrict oral testimony at the hearing to no more than 5 minutes.

Phone: The COVID-19 pandemic has required the use of alternate methods to gather comments, including virtual hearings. The Omicron variant surge has further restricted access for some stakeholders. In light of this unique situation, Oregon OSHA is offering the ability to leave a public comment on the proposed rules as a voicemail message, which will be transcribed and recorded if received before March 18, 2022, 5:00 PM. The agency will make reasonable efforts to translate messages that are not in English.

Voicemail messages may be left 24 hours a day by calling: 1-833-604-0884 (toll free) or 503-947-7396, and must be under two minutes in length.

EXHIBIT A

Rulemaking Summary:

Oregon OSHA is proposing to adopt permanent rules to prevent heat illness when employees are exposed to high ambient temperatures. Without specific rule requirements, both employers and workers may not clearly understand Oregon OSHA's expectations of what must be done to prevent work-related heat illness. This is especially concerning given Oregon's recent record-setting heat in June 2021, which appears to have contributed to multiple workplace hospitalizations and fatalities. These recent events underscore the need to adopt rules to protect workers against the serious risk of work-related heat illness.

On March 10, 2020, Governor Brown issued Executive Order 20-04 (EO 20-04) which directed certain state agencies to reduce greenhouse gas emissions (GHGs) and mitigate the impacts of climate change. EO 20-04 included a directive to the Oregon Health Authority (OHA) and Oregon OSHA to jointly develop a proposal for rules to protect employees from workplace exposures to excessive heat and wildfire smoke. In response to EO 20-04, Oregon OSHA, in collaboration with the OHA, a rulemaking advisory committee, and stakeholders, developed these proposed rules to protect employees from the serious risk of work-related heat illness. These rules clearly articulate the workplace practices required to better protect workers from heat illness when the heat index (apparent temperature) equals or exceeds 80 degrees Fahrenheit.

Given the unprecedented heat wave that resulted in record high temperatures, the agency adopted temporary rules addressing heat in the summer of 2021, these temporary rules included: Administrative Order 6-2021: Temporary Rules to Address Employee Exposure to High Ambient Temperatures and Administrative Order 8-2021: Temporary Amendment OAR 437-004-1120 to Address High Ambient Temperatures in Labor Housing. These temporary rules were put in place while the permanent rulemaking process was ongoing.

The agency, in consultation with OHA, engaged over 100 stakeholders through a Rule Advisory Committee (RAC) in the permanent rulemaking process. The RAC met nine times beginning in February 2021, and Oregon OSHA presented multiple drafts for comment. In addition, Oregon OSHA hosted four listening sessions, held in May and September 2021, to provide an opportunity for workers and community stakeholders to share their experiences on the challenges of heat in the workplace, in addition to hearing about how Oregon OSHA's temporary rule affected their workplaces.

These proposed rules apply to all workers in Oregon covered under the Oregon Safe Employment Act (OSEAct). OAR 437-004-1131 applies to employers covered under Division 4 (Agriculture), while OAR 437-002-0156 applies to work activities covered under Division 2 (General Industry). Since worker exposure to high temperature conditions that can increase the risk of heat illness is not limited to a specific industry, work activities covered under Division 3 (Construction) or Division 7 (Forest Activities) would also be required comply with OAR 437-002-0156, per additional applicability requirements under OAR 437-003-0005 and OAR 437-007-0004, respectively.

OAR 437-004-1131 and OAR 437-002-0156 offer multiple exemptions for certain conditions. Workplaces and operations exempt from these rules include incidental heat exposures where an employee is not required to perform work activities for more than 15 minutes in any sixty-minute period; exposures to heat generated from the work process – such as occurs in

foundries; and lastly, all emergency operations that are directly involved in the protection of life or property, or the restoration of essential services, such as evacuation, rescue, medical, structural firefighting, law enforcement, utilities, and communications. Other workplaces have partial exemptions, including employers whose employees perform either “rest” or “light” workloads (as defined in the rule); associated support activities for wildland firefighters such as fire camp services and fire management; and, employees who work from home are subject only to the training requirements.

The proposed requirements of OAR 437-004-1131 and OAR 437-002-0156 address the following: access to shade; drinking water; high heat practices, including the development of work/rest schedules for certain temperature thresholds; emergency medical and actions plans; acclimatization plan; heat illness prevention plan; supervisor and employee training; and training documentation.

Additionally, this rulemaking amends OAR 437-004-1120 to address the issue of heat in employer-provided labor housing. Oregon OSHA recognizes the effect of heat in such housing, and that its impact is magnified on workers because of their limited ability to recover from hot outdoor working conditions.

The new provisions in OAR 437-004-1120 require that when the heat index is at or above 80 degrees Fahrenheit outside the housing units, housing without suitable temperature control (able to keep indoor temperatures under 78 degrees Fahrenheit) must include common areas to provide some relief. Employers can provide indoor cooling rooms (using air conditioners, evaporative coolers, air purifiers with coolers, or other reliable means) or shaded outdoor rest areas open to the breeze equipped with cooling devices. Other requirements include strategies to minimize heat in housing units, including window coverings and fans. In the proposal, thermometers are required in all housing units, and humidity gauges are encouraged. Lastly, the new provisions call for employers to ensure that the occupants in labor housing have information about heat illness, how to avoid it, and how to contact emergency medical care in the event of serious illness.

This rulemaking includes non-substantive changes in the labor housing rules in Division 4 to correct scrivener’s errors related to outlining, and updates rule references; these changes are necessary to file the proposed amendments. The changes proposed in 437-004-1120 will apply to all employer-provided labor housing, including those that fall under OAR 437-002-0142.

Please visit our website osha.oregon.gov/rules to view our proposed rules, or select other rule activity from this page.

When does this happen: Adoption tentatively will be in April 2022.

To get a copy: Our web site – osha.oregon.gov Rules and laws, then,
Proposed rules
Or call 503-947-7449

To comment: Department of Consumer and Business Services/
Oregon OSHA

PO BOX 14480
Salem OR 97309-0405
Email: OSHA.rulemaking@dcbs.oregon.gov
Fax: 503-947-7461
Voicemail: 1-833-604-0884 (toll free) or 503-947-7396

Comment period closes: March 18, 2022 at 5:00 PM

Oregon OSHA contact: Ted Bunch, Salem Central Office @ 503-378-3272, or
email at Theodore.BUNCH@dcbs.oregon.gov

Note: In compliance with the Americans with Disabilities Act (ADA), this publication is available in alternative formats by calling 503-378-3272.

Secretary of State
NOTICE OF PROPOSED RULEMAKING HEARING*

A Statement of Need and Fiscal Impact accompanies this form.

Department of Consumer and Business Services/Oregon OSHA

Agency and Division

OAR 437

Administrative Rules Chapter Number

Lisa Appel

Rules Coordinator

350 Winter Street NE Salem OR 97301-3882

Address

503-947-7449

Telephone

RULE CAPTION

Rules to Address Employee and Labor Housing Occupant Exposure to High Ambient Temperatures

The Agency requests public comment on whether other options should be considered for achieving the rule's substantive goals while reducing the negative economic impact of the rule on business.

Virtual Public Hearings Scheduled for:

Hearing Date	Time	Location	Hearings Officer
February 23, 2022	6:00 pm	Oregon OSHA, Salem	Lisa Appel
Please register for Rules to Address Employee Exposure to High Ambient Temperatures on Feb 23, 2022			
6:00 PM PST at:			
https://attendee.gotowebinar.com/register/7909938747759508747			
February 24, 2022	6:00 pm	Oregon OSHA, Salem	Lisa Appel
Please register for **Spanish-only** Rules to Address Employee Exposure to High Ambient Temperatures on			
Feb 24, 2022 6:00 PM PST at:			
https://attendee.gotowebinar.com/register/5539264134925975054			
February 25, 2022	10:00 am	Oregon OSHA, Salem	Lisa Appel
Please register for Rules to Address Employee Exposure to High Ambient Temperatures on Feb 25, 2022			
10:00 AM PST at:			
https://attendee.gotowebinar.com/register/2402892923043799051			

After registering, you will receive a confirmation email containing information about joining the webinar.

Phone: The COVID-19 pandemic has required the use of alternate methods to gather comments, including virtual hearings. The Omicron variant surge has further restricted access for some stakeholders. In light of this unique situation, Oregon OSHA is offering the ability to leave a public comment on the proposed rules as a voicemail message, which will be transcribed and recorded if received before March 18, 2022, 5:00 PM. The agency will make reasonable efforts to translate messages that are not in English.

Voicemail messages may be left 24 hours a day by calling: 1-833-604-0884 (toll free) or 503-947-7396, and must be under two minutes in length.

Auxiliary aids for persons with disabilities are available upon advance request.

RULEMAKING ACTION

ADOPT: OAR 437-002-0156, 437-004-1131

ORS 654.025(2), 654.035, 656.726(4)

Stat. Auth.

Other Authority

ORS 654.001 through 654.295

Stats. Implemented

AMEND: OAR 437-004-1120

ORS 654.025(2), 654.035, 656.726(4) ORS 658.750, 658.755, 658.780, 658.785, 658.790, 658.805

Stat. Auth.

Other Authority

ORS 654.001 through 654.295

Stats. Implemented

RULEMAKING SUMMARY

Oregon OSHA is proposing to adopt permanent rules to prevent heat illness when employees are exposed to high ambient temperatures. Without specific rule requirements, both employers and workers may not clearly understand Oregon OSHA's expectations of what must be done to prevent work-related heat illness. This is especially concerning given Oregon's recent record-setting heat in June 2021, which appears to have contributed to multiple workplace hospitalizations and fatalities. These recent events underscore the need to adopt rules to protect workers against the serious risk of work-related heat illness.

On March 10, 2020, Governor Brown issued Executive Order 20-04 (EO 20-04) which directed certain state agencies to reduce greenhouse gas emissions (GHGs) and mitigate the impacts of climate change. EO 20-04 included a directive to the Oregon Health Authority (OHA) and Oregon OSHA to jointly develop a proposal for standards to protect employees from workplace exposures to excessive heat and wildfire smoke. In response to EO 20-04, Oregon OSHA, in collaboration with the OHA, a rulemaking advisory committee, and stakeholders, developed these proposed rules to protect employees from the serious risk of work-related heat illness. These rules clearly articulate the workplace practices required to better protect workers from heat illness when the heat index (apparent temperature) equals or exceeds 80 degrees Fahrenheit.

Given the unprecedented heat wave that resulted in record high temperatures, the agency adopted temporary rules addressing in heat in the summer of 2021, these temporary rules included: Administrative Order 6-2021: Temporary Rules to Address Employee Exposure to High Ambient Temperatures and Administrative Order 8-2021: Temporary Amendment OAR 437-004-1120 to Address High Ambient Temperatures in Labor Housing. These temporary rules were put in place while the permanent rulemaking process was ongoing.

The agency, in consultation with OHA, engaged over 100 stakeholders through a Rule Advisory Committee (RAC) in the permanent rulemaking process. The RAC met nine times beginning in February 2021, and Oregon OSHA presented multiple drafts for comment. In addition, Oregon OSHA hosted four listening sessions, held in May and September 2021, to provide an opportunity for workers and community stakeholders to share their experiences on the challenges of heat in the workplace, in addition to hearing about how Oregon OSHA's temporary rule affected their workplaces.

These proposed rules apply to all workers in Oregon covered under the Oregon Safe Employment Act (OSEAct). OAR 437-004-1131 applies to employers covered under Division 4 (Agriculture), while OAR 437-002-0156 applies to work activities covered under Division 2 (General Industry). Since worker exposure to high temperature conditions that can increase the risk of heat illness is not limited to a specific industry, work activities covered under Division 3 (Construction) or Division 7 (Forest Activities) would also be required to comply with OAR 437-002-0155, per additional applicability requirements under OAR 437-003-0005 and OAR 437-007-0004, respectively.

OAR 437-004-1131 and OAR 437-002-0156 offer multiple exemptions for certain conditions. Workplaces and operations exempt from these rule include incidental heat exposures where an employee is not required to perform work activities for more than 15 minutes in any sixty-minute period; exposures to heat generated from

the work process – such as occurs in foundries; and lastly, all emergency operations that are directly involved in the protection of life or property, or the restoration of essential services, such as evacuation, rescue, medical, structural firefighting, law enforcement, utilities, and communications. Other workplaces have partial exemptions, including employers whose employees perform either “rest” or “light” workloads (as defined in the rule); associated support activities for wildland firefighters such as fire camp services and fire management; and, employees who work from home are subject only to the training requirements.

The proposed requirements of OAR 437-004-1131 and OAR 437-002-0156 address the following: access to shade; drinking water; high heat practices, including the development of work/rest schedules for certain temperature thresholds; emergency medical and actions plans; acclimatization plan; heat illness prevention plan; supervisor and employee training; and training documentation.

Additionally, this rulemaking amends OAR 437-004-1120 to address the issue of heat in employer-provided labor housing. Oregon OSHA recognizes the effect of heat in such housing, and that its impact is magnified on workers because of their limited ability to recover from hot outdoor working conditions.

The new provisions in OAR 437-004-1120 require that when the heat index is at or above 80 degrees Fahrenheit outside the housing units, housing without suitable temperature control (able to keep indoor temperatures under 78 degrees Fahrenheit) must include common areas to provide some relief. Employers can provide indoor cooling rooms (using air conditioners, evaporative coolers, air purifiers with coolers, or other reliable means) or shaded outdoor rest areas open to the breeze equipped with cooling devices. Other requirements include strategies to minimize heat in housing units, including window coverings and fans. In the proposal, thermometers are required in all housing units, and humidity gauges are encouraged. Lastly, the new provisions call for employers to ensure that the occupants in labor housing have information about heat illness, how to avoid it, and how to contact emergency medical care in the event of serious illness.

This rulemaking includes non-substantive changes in the labor housing rules in Division 4 to correct scrivener’s errors related to outlining, and updates rule references; these changes are necessary to file the proposed amendments. The changes proposed in 437-004-1120 will apply to all employer-provided labor housing, including those that fall under OAR 437-002-0142.

INDIVIDUAL RULE SUMMARY (By rule number)

Provide a brief summary of the rule (if new adoption), or a brief summary of changes made to the rule (if amending)

OAR 437-002-0156 – New rule adoption to establish protections for working in high temperatures.

OAR 437-004-1131 – New rule adoption to establish protections for working in high temperatures.

OAR 437-004-1120 – Amends rule to protect labor housing occupants from the dangers of a high-heat environment, and corrects scrivener’s errors related to outlining from the 2008 rulemaking and updates rule references.

March 18, 2022

Last Day for Public Comment

Last day to submit written comments to the Rules Coordinator

Signature

Printed name

Date

*The *Oregon Bulletin* is published on the 1st of each month and updates the rule text found in the Oregon Administrative Rules Compilation. Notice forms must be submitted to the Administrative Rules Unit, Oregon State Archives, 800 Summer Street NE, Salem, Oregon 97310 by 5:00 pm on the 15th day of the preceding month unless this deadline falls on a Saturday, Sunday or legal holiday when Notice forms are accepted until 5:00pm on the preceding workday.

ARC 920-2005

STATEMENT OF NEED AND FISCAL IMPACT

A Notice of Proposed Rulemaking Hearing or a Notice of Proposed Rulemaking accompanies this form.

Department of Consumer and Business Services/Oregon OSHA

OAR 437

Agency and Division

Administrative Rules Chapter Number

In the Matter of:

Adopting: OAR 437-002-0156 and 437-004-1131

Amending: OAR 437-004-1120

Rule Caption: Rules to Address Employee and Labor Housing Occupant Exposure to High Ambient Temperatures

Need for the Rule(s):

If Oregon OSHA does not pursue adoption of permanent rules to address employee exposure to high ambient temperatures, workers will likely be left without effective protections to prevent heat illness. Without clear rule requirements, both employers and workers may not understand Oregon OSHA's specific expectations of what must be done to prevent work-related heat illness. Work-related heat illness is especially concerning given Oregon's recent record-setting temperatures in June 2021. This unprecedented heat likely contributed to multiple workplace hospitalizations and fatalities, underscoring the need to develop clear rules to protect workers and labor-housing occupants against the serious risk of heat illness.

On March 10, 2020, Governor Brown issued Executive Order 20-04 (EO 20-04), which directed certain state agencies to reduce greenhouse gas emissions (GHGs) and mitigate the impacts of climate change. EO 20-04 included a directive to the Oregon Health Authority (OHA) and Oregon OSHA to jointly develop a proposal for rules to protect employees from workplace exposures to excessive heat and wildfire smoke. In response to EO 20-04, Oregon OSHA, in collaboration with the OHA, a rulemaking advisory committee, and stakeholders, developed these proposed rules to protect employees from the serious risk of heat illness. These rules more clearly articulate the practices to be followed to protect workers from heat illness when heat index (apparent temperature) equals or exceeds 80 degrees Fahrenheit.

Due to scrivener's errors from the 2008 Labor Housing rulemaking; which created outlining errors in OAR 437-004-1120, this rulemaking includes non-substantive outlining corrections to that rule and updates rule references. These formatting changes are needed to make corrections of the scrivener's errors to file this amendment.

Documents Relied Upon, and where they are available:

Oregon Executive Order 20-04 – Directing State Agencies to Take Actions to Reduce and Regulate Greenhouse Gas Emissions, available at: <https://www.oregon.gov/bcd/Documents/eo-energy-20-04.pdf>

Oregon OSHA website, Heat Stress topic page: <https://osha.oregon.gov/OSHARules/pd/pd-299.pdf>

Oregon OSHA Program Directive – Local Emphasis Program (LEP): Preventing Heat Related Illness, available at: <https://osha.oregon.gov/Pages/topics/heat-stress.aspx#:~:text=Local%20Emphasis%20Program%20%28LEP%29%3A%20Preventing%20Heat%20Related%20Illness,Oregon%20OSHA%E2%80%99s%20heat%20stress%20prevention%20campaign.%20A-299%2006%2F06%2F2019>

California OSHA Heat Illness Prevention standard (T8CCR 3395), available at:
<https://www.dir.ca.gov/title8/3395.html>

Washington State Department of Labor & Industries General Occupational Health Standards (WAC 296-62-095) Outdoor Heat Exposure rule, available at:
[https://lni.wa.gov/safety-health/safety-rules/chapter-pdfs/WAC296-62.pdf#WAC 296 62 095](https://lni.wa.gov/safety-health/safety-rules/chapter-pdfs/WAC296-62.pdf#WAC%20296%2062%20095)

Newspaper article, Capital Press, June 29, 2021 - "Oregon OSHA investigates death of farmworker", available at: https://www.capitalpress.com/ag_sectors/nursery/oregon-osh-investigates-death-of-farmworker/article_ff07025c-d942-11eb-b028-c38f285735b4.html

Newspaper article, Oregonian, July 1, 2021 – "Umatilla construction worker found in trailer without air conditioning is among heat-related deaths in Oregon", available at:
<https://www.oregonlive.com/weather/2021/07/umatilla-construction-worker-found-in-trailer-without-air-conditioning-is-among-heat-related-deaths-in-oregon.html>

NIOSH [2016]. NIOSH criteria for a recommended standard: occupational exposure to heat and hot environments. By Jacklitsch B, Williams WJ, Musolin K, Coca A, Kim J-H, Turner N. Cincinnati, OH: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, DHHS (NIOSH) Publication 2016-106, available at:
<https://www.cdc.gov/niosh/docs/2016-106/pdfs/2016-106.pdf>

Oregon Employment Department – Economic Data, Employment and Wages by Industry (All Counties), available at:
[Employment and Wages by Industry \(QCEW\) - QualityInfo](#)

Oregon Employment Department – A Snapshot of Oregon Firms by Size Class, 2021, August 25, 2021, by Sarah Cunningham, available at: [A Snapshot of Oregon Firms by Size Class, 2021 - Asset Publisher \(qualityinfo.org\)](#)

Dalton, M., and E. Fleishman, editors. 2021. Fifth Oregon Climate Assessment. Oregon Climate Change Research Institute, Oregon State University, Corvallis, Oregon. <https://blogs.oregonstate.edu/occri/oregon-climate-assessments/>

Statement Identifying How Adoption of Rule(s) Will Affect Racial Equity in This State:

In regards to the adoption of OAR 437-002-0156 and 437-004-1131:

These rules are not expected to impact racial equity in the workplace for underrepresented communities, as these rules advance protections for all workers covered under the Oregon Safe Employment Act (OSEAct). The adoption of the rules would help protect all workers from exposures to high temperature conditions that can increase the risk of heat illness.

In regards to the amendment of OAR 437-004-1120 to include provisions on heat illness prevention:

Excessive heat poses a threat to workers across many industries, yet the influence on the agricultural sector cannot be overstated. Oregon's agricultural workforce is largely made up of migrant laborers from Mexico and Central America, with growing numbers from east Asia and Africa. Although these workers represent a smaller percentage of Oregonians overall, they make up the majority of agricultural field workers in the state, putting them at disproportionate risk to bear the effects of heat stress (including death). This rule seeks to strengthen worker protections in agricultural labor housing, ensuring such housing has sufficient shade and cooling areas to provide for worker's needs so they can adequately rest and recover during periods of high heat exposure.

Fiscal and Economic Impact:

Statement of Cost of Compliance:

1. Impact on state agencies, units of local government and the public (ORS 183.335(2)(b)(E)):

In regards to the adoption of OAR 437-002-0156 and 437-004-1131:

All state agencies and local government units are affected by the rules in the sense that they are employers under the Oregon Safe Employment Act (OSEAct). The public as a whole will be affected only to the degree that members of the public are employers and employees subject to Oregon OSHA jurisdiction.

In regards to the amendment of OAR 437-004-1120 to include provisions on heat illness prevention:

This rule affects the agricultural community, as well all other labor housing operators that are not related to agriculture based on OAR 437-002-0142 Temporary Labor Camps. OAR 437-002-0142 out of Division 2 applies to General Industry, Construction, and Forest Activities and it requires employers to follow the Division 4 requirements (with a few specific exceptions) of OAR 437-004-1120 as they relate to labor camps.

2. Cost of compliance effect on small business (ORS 183.336):

a. Estimate the number of small businesses and types of business and industries with small businesses subject to the rule:

As of March 2021, there were approximately 106,810 firms in the State of Oregon with less than 50 employees, which accounted for 96.0% of all firms statewide. All employers operating in Oregon, regardless of size or industry, whose employees will be exposed to excessive heat, will be subject to the proposed rules OAR 437-002-0156 and 437-004-1131. Types of businesses and industries include any associated with work activities that can potentially expose employees to excessive heat, including but not limited to, workers in Agriculture and Forestry (NAICS Code 11), Construction (NAICS Code 23), and Landscaping Services (NAICS Code 561730).

All agricultural employers operating in the Oregon who offer housing to workers will be subject to the amendments to OAR 437-004-1120. Types of businesses and industries include any agricultural employer offering housing. Work is agriculture focused (NAICS Code 11). For the year 2021 there were 371 registered agricultural labor sites in Oregon.

b. Projected reporting, recordkeeping and other administrative activities required for compliance, including costs of professional services:

In regards to the proposed adoption of OAR 437-002-0156 and 437-004-1131, the projected reporting, recordkeeping and other administrative activities for the cost of compliance are identified for each section of the rule using wage information from Table 1 near the end of the document.

In regards to the amendments to OAR 437-004-1120, the projected reporting, recordkeeping and other administrative activities for the cost of compliance are identified for each section of the rule below.

c. Equipment, supplies, labor and increased administration required for compliance:

In regards to the proposed adoption of OAR 437-002-0156 and 437-004-1131, the projected equipment, supplies, labor and increased administration for the cost of compliance are identified under each section of the rule below using wage information from Table 1 and 2 near the end of the document and were determined by considering survey responses from stakeholders representing small and large businesses, example equipment costs, and administrative and labor wage information.

In regards to the amendments to OAR 437-004-1120, estimated costs related to equipment, supplies, labor and increased administration for implementation are identified under specific sections of the rule

requirements listed below and were determined by considering survey responses from stakeholders representing agricultural labor-housing providers, example equipment costs, and administrative and labor wage information.

Estimate of the Cost of Compliance for OAR 437-002-0156 and 437-004-1131

Section (1) Scope and Application estimated costs. The proposed rules would apply whenever an employee performs work activities, whether in indoor or outdoor environments, where the heat index (apparent temperature) equals or exceeds 80 degrees Fahrenheit.

The estimated cost for employers to determine workplace applicability, and to complete a comprehensive review of the proposed standard to determine administrative and operational needs for compliance, uses stakeholder provided survey data that indicates a majority of employers estimated between 2-80 hours to complete such a review.

Using 2- 80 hours for administrative time to complete a comprehensive review of the standard, the median (50th percentile) wage data from selected occupational profiles from Table 1 (near the end of the document), and an additional 35% for soft costs, the estimated costs are:

General and Operations Managers (111021):

\$48.87/hr x 2-80hrs x 1.35 (soft cost estimate) = \$131.95 - \$5,277.96

Human Resource Managers (113121):

\$52.33/hr x 2-80hrs x 1.35 (soft cost estimate) = \$141.29 - \$5,651.64

Farmers, Ranchers, and other Ag Managers (119013):

\$38.29/hr x 2-80hrs x 1.35 (soft cost estimate) = \$103.38 - \$4,135.32

Construction Managers (119021):

\$48.47/hr x 2-80hrs x 1.35 (soft cost estimate) = \$103.87 - \$5,234.76

Occupational Health and Safety Specialists (299011):

\$38.84/hr x 2-80hrs x 1.35 (soft cost estimate) = \$104.87 - \$4,194.72

When surveyed, most employers reported that it would take an average of 40 hours to review the proposed heat standard.

Section (3) Access to shade estimated costs. The proposed rules would require employers to establish and maintain one or more shade areas for employees performing outdoors work activities when the heat index in the work area equals or exceeds 80 degrees Fahrenheit, and when adequate shade is not otherwise readily available. The shade area must either be open to the outside air (at least three open sides) or provide mechanical ventilation for cooling, and be large enough to accommodate the number of employees on rest and meal periods, so that they can sit in a normal posture fully in the shade.

Shade:

Canopies - 10' x 10' canopies may be obtained from a variety of sources including, Amazon, Lowe's, and Target, from \$149.00 to \$279.00. The cost varies based upon the number of sidewalls purchased. Larger canopies such as 12' x 12' and 12' x 20', depending upon the employer's needs.

Shade sails

Amazon sells shade sails, in both triangle and rectangle shaped, in various sizes, that cost from \$24.00 to \$120.00

Umbrellas

1. Amazon sells golf umbrellas, from 62"-72", that sell from \$21.99 - \$29.99
2. Amazon sells an industrial umbrella that provides enough shade for 1-2 workers for \$92.00. Others sell for up to \$200.00

Alternative cooling methods

Cooling vests

1. Uline has evaporative cooling vests for \$46/ea or when buying 3 or more, for \$44
2. Amazon has evaporative cooling vests (water only) from \$9.99. Amazon also has cooling vests (with ice packs) from \$28.99 to \$236.00 (with extra ice packs)
3. Amazon has cooling vests with fans that cost from \$19.00 to \$65.99

Cooling towels

1. Artic Cool "Instant Cooling Towel" cost \$9.99
2. "Frogg Toggs Chilly Pad Cooling Towel" cost \$10.99, available from Northern Tool + Equipment
3. Amazon has a ten-piece set of cooling towels for \$75.00

Note: the temperatures below do not account for relative humidity.

Table 3.1: Number of days equal to or greater than 80°F but less than 90°F, by select Oregon cities (station ID)

	2021	2020	2019	2018	2017
Bend (USC00350694)	41	54	56	47	46
Medford (USW00024225)	55	52	57	65	40
Salem (USW00024232)	57	45	52	44	53
Portland (USC00356750)	66	51	49	39	52

Table 3.2: Number of days equal to or greater than 90°F but less than 100°F

	2021	2020	2019	2018	2017
Bend (USC00350694)	35	23	6	26	26
Medford (USW00024225)	51	54	54	52	62
Salem (USW00024232)	35	15	9	31	29
Portland (USC00356750)	17	14	9	32	24

Table 3.3: Number of days equal to or greater than 100°F

	2021	2020	2019	2018	2017
Bend (USC00350694)	3	2	0	1	0
Medford (USW00024225)	23	18	2	11	15
Salem (USW00024232)	6	2	1	0	4
Portland (USC00356750)	5	0	0	0	3

Data downloaded from <https://www.ncdc.noaa.gov/cdo-web/search>

Due to climate change, Oregon is projected to have more extreme temperatures in the future. Oregon OSHA recognizes that the retrospective data above represents only certain Oregon cities, and is not intended to be used as a forecast for future temperature trends.

Section (4) Drinking water estimated costs. The proposed rules would require employers to ensure that an adequate supply of drinking water is provided to enable each employee to consume up to 32 ounces per hour at their discretion when the heat index in the work area equals or exceeds 80 degrees Fahrenheit.

Water – If employees do not have access to plumbed potable water, employers are required to supply 32 ounces of water per employee per hour, totaling 256 ounces per day, when the heat index equals or exceeds 80 degrees Fahrenheit. Bottled water may be obtained from a variety of sources such as Amazon, Costco, and Office Supply for an average of \$0.24 per ounce, costing employers an estimated \$61.44 per employee per day, when the heat index equals or exceeds 80 degrees Fahrenheit.

Note: Employers have always had to provide water; there are no rules prior that required a certain quantity.

According to Table 3.1, Table 3.2, and Table 3.3 in section (3) above, an employer in Portland, Oregon would have needed to supply water for a total of 88 days in 2021, costing an estimated \$5,406.72 per employee if plumbed water was unavailable, while an employer in Medford, Oregon would have needed to supply water for a total of 129 days, costing \$7,925.76 per employee.

Water coolers

1. An Igloo water cooler from Ace Hardware cost \$55.00
2. A Rubbermaid Commercial 5-Gallon Water Cooler cost \$52.35 from Amazon
3. Amazon also has Igloo water coolers from \$40.000 (5-gal) to \$80.00 (10-gal)

Section (5) High heat practices estimated costs. When engineering controls (such as fans, or air conditioning) or administrative controls (such as scheduling work during the cooler part of the day or limiting an employee's exposure) or engineering controls (i.e. fans, provide air conditioning) do not reduce an employee's exposure to an ambient heat index of less than 90 degrees Fahrenheit, the proposed rules would require employers to implement and maintain high heat practices which include effective communication, access to emergency medical services, a heat illness prevention work/rest schedule, and monitoring heat and humidity in indoor work environment where there is no mechanical ventilation cooling system.

- (A) Implement a written, employer-specific heat illness prevention work/rest schedule using the minimum work/rest durations in Table 5.1 and the information in subparagraph (e)(A)(i) through (e)(A)(iv) below.

Table 5.1: Minimum employer-specific work/rest durations:

Heat index temperature (°F)	Rest break duration
90 or greater	10 minutes every two hours
100 or greater	20 minutes every hour

- (B) Implement an effective heat illness prevention work/rest schedule using the applicable recommendations under DHHS (NIOSH) CDC/NIOSH Publication No. 20167-106, "Criteria for a Recommended Standard: Occupational Exposure to Heat and Hot Environments," or equivalent, provided that their decision to do so is documented in writing; or

- (C) Implement a written simplified heat illness prevention work/rest work rest schedule using Table 5.2.

Table 5.2: Simplified heat illness prevention work/rest work rest schedule

Heat index temperature (°F)	Rest break duration
90 or greater	10 minutes every two hours
95 or greater	20 minutes every hour
100 or greater	30 minutes every hour
105 or greater	40 minutes every hour

Using the data in Table 3.1, Table 3.2, and Table 3.3, an employer in Portland, Oregon would have fallen under the requirements of section (5) High heat practices for 22 days, while an employer in Medford, Oregon would have fallen under the requirements of section (5) High heat practices for 74 days.

Communication

When surveyed, most employers reported that they already have communication systems in place.

Direct measurement of heat index

Thermometers – Thermometers that also measure relative humidity (required in structures that are affected by outdoor humidity such as greenhouses and hoop houses) may be purchased from a variety of vendors/manufacturers such as Amazon and Target for between \$9.00 and \$32.00.

National Institute for Occupational Safety and Health's (NIOSH) Heat Safety Tool app

The National Institute for Occupational Safety and Health's (NIOSH) Heat Safety Tool app is free.

Work/rest schedules estimates of costs

The Oregon Bureau of Labor & Industries (BOLI) requires that employees be provided two 10-minute paid breaks and one 30-minute unpaid meal break for each eight-hour work shift. These rules provide for three options for compliance, cost of each option is described below. Only one option should be included in the total cost to an employer.

(A) Minimum employer-specific work/rest durations:

- a. When the heat index is greater than 90 degrees Fahrenheit but less than 100 degrees Fahrenheit, the rule requires rest breaks of 10 minutes every two hours, totaling four 10-minute rest breaks in an 8-hour work day. Two of these rest breaks are already required by BOLI to be paid. Using the mean hourly wage across all occupations (\$27.34) plus cost (\$9.57) equals \$36.91. The two additional 10-minute rest breaks will cost \$12.30 per employee per day.
- b. When the heat index is greater than 100 degrees Fahrenheit, the rule requires a 20-minute rest breaks every hour, totaling 160 mins of rest breaks in an 8-hour work day. BOLI requires two 10-minute rest breaks in an 8-hour shift, equaling 140 mins of rest breaks to account for; this equals \$86.14 per employee per day when using the mean hourly wage across all occupations (\$27.34) plus cost (\$9.57) equaling \$36.91. Using the data in Table 5.1 in section (3) above, this would have cost an employer in Portland, Oregon \$430.70 in additional paid rest breaks per employee, while it could have cost an employer in Medford, Oregon \$1,981.22 in additional paid rest breaks per employee.

(B) See Table 5.3 (below) for the National Institute for Occupational Safety and Health's work/rest schedule recommendations. The table shows the cost per employee per hour the rest breaks will cost. Cost vary based upon the ambient temperature and by work loads (light, moderate, and heavy). The length of the rest breaks (in minutes per hour) are provided based upon the work load. Cost were generated using the mean hourly wage across all occupations (\$27.34) plus cost (\$9.57) equals \$36.91. As an example, when the ambient air temperature is 100 degrees Fahrenheit and heavy work is being performed, the rest break length is 30 minutes per hours, totaling a cost to the employer of \$18.48 per employee per hour when the ambient air temperature is 100 degrees Fahrenheit (unadjusted for humidity).

Table 5.3: NIOSH's Work/Rest Schedule Recommendations

Degrees Fahrenheit	Light work Work/Rest	Number of 5 min increments	In dollars per employee per hour	Moderate work Work/Rest	Number of 5 min increments	In dollars per employee per hour	Heavy work Work/Rest	Number of 5 min increments	In dollars per employee per hour
90									
91									
92									
93									
94									
95							15	3	9.24
96							15	3	9.24
97							20	4	12.32
98							25	5	15.4
99							25	5	15.4
100				15	3	9.24	30	6	18.48
101				20	4	12.32	30	6	18.48
102				25	5	15.40	35	7	21.56
103				30	6	18.48	40	8	24.64
104				30	6	18.48	40	8	24.64
105				35	7	21.56	45	9	27.72
106	15	3	9.24	40	8	54.64			
107	20	4	12.32	45	9	27.72			
108	25	5	15.40						
109	30	6	18.48						
110	45	9	27.72						
111	Caution								
112									

An employer estimated that using NIOSH's work/rest schedule, employees would be impacted between 120-160 hours per employee. Using the average wage rate of \$36.91, this would equal an annual cost of \$4,429.20 - \$5,906.60 per employee for implementation.

(C) Following the simplified work/rest schedule in Table 5.2 above, the following Table 5.4 provides estimated costs based on the mean hourly wage*:

Table 5.4: Work/rest schedule costs using mean hourly wage

Heat index temperature (°F)	Rest break durations	Cost
90 or greater	15 minutes every two hours	\$9.24
95 or greater	20 minutes every hour	\$12.32
100 or greater	30 minutes every hour	\$18.48
105 or greater	40 minutes every hour	\$24.64

*Costs in Table 5.4 were generated using the mean hourly wage across all occupations (\$27.34) plus cost (\$9.57) equaling \$36.91.

Administrative cost to develop work/rest schedule in writing

The estimated total cost to develop work/rest schedules in writing uses an estimated development time of between 2-40 hours, the lowest and highest median (50th percentile) wage data from selected examples of occupational profiles from Table 1 near the end of the document, and an additional 35% for soft costs;

First-line Supervisors of Farming, Fishing, and Forestry Workers (451011)

\$26.26/hr x 2-40hrs x 1.35 (soft cost estimate) = \$70.90 - \$1,418.04/yr

Human Resource Managers (113121):

\$52.33/hr x 2-40hrs x 1.35 (soft cost estimate) = \$141.29 - \$2,825.82/yr

Section (6) Emergency Medical Plan and Emergency Action Plan estimated costs.

(a) Employers covered by OAR 437, Division 2, must ensure their Emergency Medical Plan addresses employee exposure to excessive heat, in accordance with OAR 437-002-0042.

(b) Agricultural employers covered by OAR 437, Division 4, must ensure their Emergency Action Plan to addresses employee exposure to excessive heat, in accordance with OAR 437-004-0450.

The estimated total cost to either develop or update Emergency Medical Plans or Emergency Action plans uses an estimated total estimated development time of between 2 – 40 hours, the lowest and highest median (50th percentile) wage data from selected examples of occupational profiles from Table 1 near the end of the document, and an additional 35% for soft costs;

First-line Supervisors of Farming, Fishing, and Forestry Workers (451011)

\$26.26/hr x 2-40hrs x 1.35 (soft cost estimate) = \$70.90 - \$1,418.04/yr

Human Resource Managers (113121):

\$52.33/hr x 2-40hrs x 1.35 (soft cost estimate) = \$141.29 - \$2,825.82/yr

Section (7) Acclimatization Plan estimated costs.

The proposed rules would require employers to develop and implement effective acclimatization procedures and plans in writing to effectively prevent heat-related illnesses. The proposed rules allows employers to either develop their own acclimatization plan taking specific elements in consideration, follow the acclimatization plan developed by the Centers for Disease Control and Prevention and NIOSH.

Acclimatization schedules

NIOSH has two different acclimatization schedules; one is for new workers and the other is for workers who have had previous experience on the job. For new workers, the schedule should be no more than a 20% exposure on day 1 and an increase of no more than 20% on each additional day. For workers who have had previous experience with the job, the acclimatization regimen should be no more than a 50% exposure on day

1, 60% on day 2, 80% on day 3, and 100% on day 4. Acclimatization schedules are likely to impact employers that have workers that perform work outdoors.

Oregon OSHA does not expect that acclimatization will result in any negative cost to employers, provided employers are able to have employees start work earlier in the day to avoid high heat or relocate workers to an area with lower ambient temperatures.

These rules provide for two options for compliance, cost of each option is described below. Only one option should be included in the total cost to an employer.

Cost to develop an acclimatization plan

Option (a)

The estimated total cost to develop an acclimatization plan uses an estimated time of between 2 – 40 hours, the lowest and highest median (50th percentile) wage data from selected examples of occupational profiles from Table 1 near the end of the document, and an additional 35% for soft costs;

First-line Supervisors of Farming, Fishing, and Forestry Workers (451011)

$\$26.26/\text{hr} \times 2\text{-}40\text{hrs} \times 1.35$ (soft cost estimate) = \$70.90 - \$1,418.04/yr

Human Resource Managers (113121):

$\$52.33/\text{hr} \times 2\text{-}40\text{hrs} \times 1.35$ (soft cost estimate) = \$141.29 - \$2,825.82/yr

Option (b)

There is no cost associated with developing an acclimatization plan when employers chose to follow NIOSH's acclimatization schedule.

Section (8) Heat Illness Prevention Plan estimated costs. The proposed rules would require employers to develop, implement, and maintain, an effective heat illness prevention plan, in writing.

Estimated cost to develop, implement and maintain Heat Illness Prevention Plan

The estimated total cost to develop, implement and maintain a Heat Illness Prevention plan uses an estimated time of between 2-40 hours, the lowest and highest median (50th percentile) wage data from selected examples of occupational profiles from Table 1 near the end of the document, and an additional 35% for soft costs;

First-line Supervisors of Farming, Fishing, and Forestry Workers (451011)

$\$26.26/\text{hr} \times 2\text{-}40\text{hrs} \times 1.35$ (soft cost estimate) = \$70.90 - \$1,418.04/yr

Human Resource Managers (113121):

$\$52.33/\text{hr} \times 2\text{-}40\text{hrs} \times 1.35$ (soft cost estimate) = \$141.29 - \$2,825.82/yr

Section (9) Supervisor and employee training estimated costs. The proposed rules would require employers to provide annual training to all employees, including new employees, supervisory and non-supervisory employees in a language and vocabulary readily understood before employees begin work that should reasonably be anticipated to expose employees to the risk of heat illness.

Estimated cost

Estimate 4 hours of administrative time to develop the required training materials that includes the applicable training elements listed in the rule. Estimate one hour of employee time to complete the training. Estimate two hours of trainer time to prepare for and conduct each employee training session (assume 3 training sessions). Estimate a workforce of 9 employees.

Using 50th percentile complete wage of occupational health and safety specialist: \$51.61/hr

$\$51.61/\text{hr} \times 4\text{hrs}$ = \$206.44/initial training material development (one-time cost)

$\$51.61/\text{hr} \times 2\text{hrs} \times 3$ training sessions = \$309.66/trainer costs to provide three training sessions

Using 50th percentile complete wage of human resource specialist: \$39.08/hr
\$39.08/hr x 4hrs = \$156.32/initial training material development (one-time cost)
\$39.08/hr x 2hrs x 3 training sessions = \$234.48/trainer costs to provide three training sessions

Using 50th percentile of 2020 General Oregon Wage Data: \$20.34/hr x 135% (soft cost estimate) =
\$27.46 (complete wage estimate at 50th percentile)

Estimate a workforce of 9 employees that must complete the one-hour training
\$27.46/hr x 1hr x 9 employees = \$247.14/workforce of 9 employees to complete training (one-time cost)

Section (11) Training documentation estimated costs. The proposed rules would require employers document annual employee training in writing or electronically, and maintain the most recent training record for each affected employee.

The estimated total cost to document annual supervisor and employee heat training in writing or electronically each year uses an estimated total estimated documentation time between 2-40 hours, the lowest and highest median (50th percentile) wage data from selected examples of occupational profiles from Table 1 below, and an additional 35% for soft costs;

First-line Supervisors of Farming, Fishing, and Forestry Workers (451011)
\$26.26/hr x 2-40hrs x 1.35 (soft cost estimate) = \$70.90 - \$1,418.04/yr

Human Resource Managers (113121):
\$52.33/hr x 2-40hrs x 1.35 (soft cost estimate) = \$141.29 - \$2,825.82/yr

Wage Reference Information: Data in Tables 1 and 2 below is from the Oregon Employment Department (OED) occupational profile reports for Occupational wage data in QualityInfo representing first quarter 2021 wages. Per OED (Data Sources and Limitations for Occupational Wages), *“The data used to create these estimates came from the Occupational Employment and Wage Survey. This survey samples more than 6,000 business establishments per year, taking three years to fully collect the sample of more than 18,000 establishments. The data used for the current wage estimates came from surveys that were conducted in 2017, 2018, 2019, and 2020. The wage data were then adjusted to 2021 using the Employment Cost Index. It is important to note that these wage rates may vary between industries, as well as by firm size within an industry. Also, when determining wage rates for individual occupations, it is important to assess current labor market conditions which may also affect wages.”*

Table 1: 2021 Oregon Occupational Wage Data for Administrative Costs				
North American Industrial Code System (NAICS)	Occupation Profile Description	Statewide average hourly wage in dollars (\$)		
		10th Percentile	50th Percentile (Median)	90th Percentile
111021	General and Operations Managers	20.33	48.87	78.24
113121	Human Resource Managers	30.70	52.33	84.19
119013	Farmers, Ranchers, and other Ag Managers	17.06	38.29	54.61
119021	Construction Managers	29.43	48.87	78.24
299011	Occupational Health and Safety Specialists	24.07	38.84	54.75
371012	First-Line Supervisors of Landscaping, Lawn Service, and Groundskeeping Workers	16.56	26.52	41.03
451011	First-line Supervisors of Farming, Fishing, and Forestry Workers	16.23	26.26	38.95
471011	First-Line Supervisors of Construction Trades	23.32	36.58	55.46
511011	First-Line Supervisors of Production and Operating Workers	18.67	29.25	44.91
Source: Oregon Employment Department – Economic Data, Employment and Wages by Industry (All Counties), available at: Employment and Wages by Industry (QCEW) - QualityInfo				

Table 2: 2021 Oregon Occupational Wage Data for Labor Costs				
North American Industrial Code System (NAICS)	Occupation profile description	Statewide average hourly wage in dollars (\$)		
		10th Percentile	50th Percentile (Median)	90th Percentile
194093	Forest and Conservation Technician	13.64	18.27	30.27
292041	Emergency Medical Technicians and Paramedics	13.42	20.23	31.45
332011	Firefighters	15.14	32.01	50.22
333051	Police and Sheriff's Patrol Officers	26.83	38.24	49.08
373011	Landscaping and Groundskeeping Workers	12.93	17.50	25.43
373013	Tree Trimmers and Pruners	17.02	26.72	39.22
435041	Meter Readers, Utilities	18.38	26.28	34.94
435052	Postal Service Mail Carriers	18.73	24.07	32.59
452092	Farmworkers and Laborers, Crop, Nursery, and Greenhouses	12.40	14.01	18.33
452099	Agricultural Workers, All Other	12.41	18.94	32.03
454011	Forest and Conservation Workers	12.49	17.84	24.75
454021	Fallers (Logging)	22.54	32.78	40.60
454023	Log Graders and Skidders	14.22	22.97	29.52
454029	Logging Workers, All Other	17.15	21.76	26.52
472031	Carpenters	16.79	26.12	40.89
472061	Construction Laborers	13.97	20.46	31.79
472181	Roofers	14.95	24.13	38.66
472231	Solar Photovoltaic Installers	19.45	28.75	36.79
474051	Highway Maintenance Workers	20.26	26.65	31.86
499021	Heating, Air Conditioning, and Refrigeration Mechanics and Installers	15.69	25.79	39.61
499051	Electrical Power-Line Installers and Repairers	37.92	49.74	61.88
499052	Telecommunications Line Installers and Repairers	17.55	24.80	36.05
499071	Maintenance and Repair Worker wages	13.52	20.09	31.67
533021	Bus Drivers, Transit and Intercity	16.38	24.64	32.43
533022	Bus Drivers, School or Special Client	12.80	18.17	24.57
533033	Light Truck or Delivery Services Drivers	13.20	18.83	31.69
519198	Helpers – Production Workers	12.77	16.58	23.47
537063	Machine Feeders and Offbearers	13.61	18.28	24.66
Source: Oregon Employment Department – Economic Data, Employment and Wages by Industry (All Counties), available at: Employment and Wages by Industry (QCEW) - QualityInfo				

Estimate of the Cost of Compliance for amending OAR 437-004-1120 to include the Heat Illness Prevention section.

The estimated cost for employers to determine workplace applicability, and to complete a comprehensive review of the proposed standard to determine administrative and operational needs for compliance, uses stakeholder provided survey data that indicates a majority of employers estimated between 2 – 16 hours to complete such a review.

Using 2 – 16 hours for administrative time to complete a comprehensive review of the standard, the median (50th percentile) wage data from selected occupational profiles from Table 1 (see above, and an additional 35% for soft costs, the estimated costs are:

Farmers, Ranchers, and other Ag Managers (119013): \$38.29/hr x 1.35 (soft cost estimate) x 2-16 hours = \$103.38 - \$827.04

Subsection (25)(a) Cooling Areas

Indoor cooling units (window or in-wall AC units, and portable evaporative coolers) can be obtained through a variety of sources including Amazon, Lowes, Home Depot, Grainger, and Sylvane. The cost varies based on style (window, portable, through the wall), capacity, and features (for example, WIFI capability).

Residential Grade window indoor AC units capable of cooling between 300 and 700 sq. ft (8,000 – 14,000 BtuH) sold at Grainger cost between \$400 and \$1,200 per unit. Units capable of cooling 1,500 sq. ft cost approximately \$1400.00 per unit.

Residential Grade through the wall AC units capable of cooling between 300 and 700 sq. ft sold at Grainger cost between \$600 - \$1,100 per unit.

Portable evaporative coolers sold at Grainger capable of cooling between 350 and 3,000 sq. cost between \$400 and \$1,600 per unit.

Shade:

Canopies - 10' x 10' canopies may be obtained from a variety of sources including, Amazon, Lowe's, and Target, from \$149.00 to \$279.00. The cost varies based upon the number of sidewalls purchased. Larger canopies such as 12' x 12' and 12' x 20', depending upon the employer's needs.

Shade sails - Amazon sells shade sails, in both triangle and rectangle shaped, in various sizes, that cost from \$24.00 to \$120.00

Cooling vests

1. Uline has evaporative cooling vests for \$46/ea or when buying 3 or more, for \$44
2. Amazon has evaporative cooling vests (water only) from \$9.99. Amazon also has cooling vests (with ice packs) from \$28.99 to \$236.00 (with extra ice packs)
3. Amazon has cooling vests with fans that cost from \$19.00 to \$65.99

Cooling towels

1. Artic Cool Instant Cooling Towel: \$9.99
2. "Frogg Toggs Chilly Pad Cooling Towel": \$10.99
3. Amazon has a ten-piece set of cooling towels for \$75.00

Misting fans

1. Kobalt indoor/outdoor misting fan stand: \$122.55
2. XPOWER heavy duty misting fan: \$180.00

Subsection (25)(b) – Minimize Heat in Housing Units

Window awnings

1. Awnings in a Box, 96" wide: \$333.39
2. Mcombo Aluminum retractable awning: \$249.99

Indoor window coverings

1. Brookstone blackout window curtain, 84", \$31.99 per panel
2. Eclipse Ambiance blackout curtain panel, 50", \$80.00 per panel
3. Exclusive Fabrics & Furnishing blackout curtain, 100", \$134.93 per panel

Fans

1. Lasko high velocity fan: \$78.49
2. Floor fan (24"): \$215

Subsection (25)(c) – Temperature Awareness

Thermometers – Thermometers that also measure relative humidity may be purchased from a variety of vendors/manufacturers such as Amazon and Target for between \$9.00 and \$32.00.

Subsection (25)(d) – Employee and Occupant Information. Heat Risks in Housing poster is available free of charge from Oregon OSHA.

Subsection (25)(e) – Access to Emergency Services

No substantive cost is expected, as a phone is already required by BOLI OAR 839-014-0610(1)

How were small businesses involved in the development of these rules?

Small businesses and others were involved in the development of these rules to the extent that their representatives represented them during the Rulemaking Advisory Committee meetings. Those interested have also had the opportunity to comment on several pre-proposal drafts during the rulemaking process and a fiscal impact survey.

Was an Administrative Rule Advisory Committee consulted?

Yes, Oregon OSHA hosted nine virtual Rulemaking Advisory Committee meetings during this permanent rulemaking process. Comments were accepted during meetings, through stakeholder feedback on pre-proposal drafts, and emails throughout the stakeholder engagement process. Oregon OSHA surveyed the Rulemaking Advisory Committee, including the Agriculture Labor Housing Advisory Committee members, on the provisions of the rule for gaining a greater understanding of the cost of compliance with the rule. The draft Fiscal Impact Statement was provided to the Advisory Committee members for comment. Those comments received were folded into the final Fiscal Impact Statement.


Signature

Renee Stapleton
Printed name

1/28/2022
Date

Administrative Rules Unit, Archives Division, Secretary of State, 800 Summer Street NE, Salem, Oregon 97310. ARC 925-2007

HOUSING COST IMPACT STATEMENT

FOR ESTIMATING THE EFFECT OF A PROPOSED RULE OR ORDINANCE ON THE COST OF DEVELOPING
A *TYPICAL 1,200 SQ FT DETACHED SINGLE FAMILY DWELLING ON A 6,000 SQ FT PARCEL OF LAND.
(ORS 183.534)
FOR ADMINISTRATIVE RULES

AGENCY NAME: DCBS/Oregon OSHA **PERMANENT:** Yes **HEARING DATES:** February 23, 24, and 25, 2022

ADDRESS: 350 Winter Street NE

CITY/STATE: Salem OR 97301-3882

PHONE: 503-947-7449

EFFECTIVE DATE: Tentatively April 2022

BELOW PLEASE PROVIDE A DESCRIPTION OF THE ESTIMATED SAVINGS OR ADDITIONAL COSTS THAT WILL RESULT FROM THIS PROPOSED CHANGE.

PROVIDE A BRIEF EXPLANATION OF HOW THE COST OR SAVINGS ESTIMATE WAS DETERMINED.

IDENTIFY HOW CHANGE IMPACTS COSTS IN CATEGORIES SPECIFIED.

Description of proposed change:

Oregon OSHA is promulgating these rules to prevent heat illness when employees and labor-housing occupants are exposed to high ambient temperatures.

Description of the need for, and objectives of the rule:

As a result of climate change, Oregon will experience increased extreme temperatures, especially during summer months. Even with advancements in climate science and computer modeling, it is still impossible to accurately forecast these seasonal, extreme temperature events. Since the agency is unable to accurately estimate the total days construction workers will be exposed to temperatures that equal or exceed 80 degrees Fahrenheit, when constructing a typical single-family house, the estimated housing impact costs provided herein are on a daily or per project basis. See attached Statement of Need and Fiscal Impact for days that select Oregon cities experienced temperatures greater than 80 degrees Fahrenheit from 2017 to 2021, specifically see Tables 3.1, 3.2 and 3.3 in the Cost of Compliance for OAR 437-002-0156 and 437-004-1131.

List of rules adopted or amended:

ADOPT: OAR 437-002-0156 and OAR 437-004-1131

AMEND: OAR 437-004-1120

Materials and labor costs increase or savings:

Since changes to OAR 437-004-1120 and adoption of 437-004-1131 only apply to employers covered under Division 4 (Agriculture), these proposed rules would not have any appreciable impact to construction activities.

OAR 437-002-1156 applies to work activities covered under Division 2 (General Industry); however, since worker exposure to unhealthy and hazardous air quality conditions from wildfire emissions is not limited to a specific industry, work activities covered under Division 3 (Construction) would also be required to comply with OAR 437-002-0156, per additional applicability requirements under OAR 437-003-0005.

While Oregon OSHA does not foresee any effects on material costs to construct a typical single-family house (3 bedrooms, 1 1/2 bathrooms, attached garage), the agency expects the following proposed rule site-specific requirements would directly increase costs of such projects.

Estimated administrative construction or other costs increase or savings:

The proposed rule would require employers to establish and maintain shade areas for employees when the heat index in the work area equals or exceeds 80 degrees Fahrenheit, and when adequate shade is not otherwise readily available. Estimated costs per project for shade equipment include:

Canopies - 10' x 10' canopies may be obtained from a variety of sources including, Amazon, Lowe's, and Target, from \$149.00 to \$279.00. The cost varies based upon the number of sidewalls purchased. Larger canopies such as 12' x 12' and 12' x 20', depending upon the employer's needs.

Shade sails

Amazon sells shade sails, in both triangle and rectangle shaped, in various sizes, that cost from \$24.00 to \$120.00

Umbrellas

1. Amazon sells golf umbrellas, from 62" – 72", that sell from \$21.99 - \$29.99
2. Amazon sells an industrial umbrella that provides enough shade for 1-2 workers for \$92.00. Others sell for up to \$200.00

The proposed rule would require employers to ensure that an adequate supply of drinking water is provided to enable each employee to consume up to 32 ounces per hour at their discretion when heat index in the work area equals or exceeds 80 degrees. If employees do not have access to plumbed water, employers are required to supply 32 ounces of water per employee per hour, totaling 256 ounces per day, when the heat index equals or exceeds 80 degrees Fahrenheit. Bottled water may be obtained from a variety of sources such as Amazon, Costco, and Office Supply for an average of \$0.24 per ounce, costing employers an estimated \$61.44 per employee per day, when the heat index equals or exceeds 80 degrees Fahrenheit.

When the heat index is greater than 90 degrees Fahrenheit but less than 100 degrees Fahrenheit, the rule requires rest breaks of 10 minutes every two hours, totaling four 10-minute rest breaks in an 8-hour work day. Two of these rest breaks are already required by Bureau of Labor and Industries (BOLI) to be paid. Using the mean hourly wage for Construction Laborers (NAICS 472061) of \$20.46 from Table 2 (2021 Oregon Occupational Wage Data for Labor Costs) of the Statement of Need and Fiscal Impact, plus an additional soft cost increase of 35 percent (\$7.16), the adjusted hourly wage rate is \$27.62. Using this adjusted rate, the two additional 10-minute rest breaks will cost an estimated \$9.21 per employee per day.

When the heat index is greater than 100 degrees Fahrenheit, the rule requires a 20-minute rest breaks every hour, totaling 160 mins of rest breaks in an 8-hour work day. BOLI requires two 10-minute paid rest breaks in an 8-hour shift, equaling an additional 140 mins of rest breaks to comply with the proposed rule. Using the same adjusted hourly wage rate above (\$27.62) for Construction Laborers, the total increased rest break time of 140 mins would cost an estimated \$64.45 per employee per day.

Land costs increase or savings:

Oregon OSHA does not foresee any effect on land costs.

Other costs increase or savings:

Oregon OSHA does not foresee any other costs development or construction costs.

PREPARERS NAME: Ted Bunch
EMAIL ADDRESS: Theodore.BUNCH@dcbs.oregon.gov

Rules to Address Employee and Labor Housing Occupant Exposure to High Ambient Temperatures

Proposed Rules for Adoption January 2022

Text removed is in ~~[brackets with line through]~~.

Text added is in bold and underline.

Heat Illness Prevention OAR 437-002-0156

(1) Scope and Application. This standard applies whenever an employee performs work activities, whether in indoor or outdoor environments, where the heat index (apparent temperature) equals or exceeds 80 degrees Fahrenheit.

Note: When another applicable standard addresses a non-heat related hazard that may be present, employers must comply with the requirements of that standard and this standard. Where the requirements of one standard are more restrictive than another for the same hazard, employers must follow the requirements that provides the higher level of employee protection.

Note: Buildings and structures that have a mechanical ventilation system that keeps the heat index temperature below 80 degrees Fahrenheit are exempt from the requirements of these rules.

(a) The following workplaces and operations are exempt from these rules:

(A) Incidental heat exposures where an employee is not required to perform work activities for more than 15 minutes in any sixty-minute period.

(B) Exposures to heat generated from the work process - such as occurs in foundries - is not subject to this standard. In such cases, employers must follow the requirements of Division 2, Subdivision J, OAR 437-002-0144(2).

(C) All emergency operations that are directly involved in the protection of life or property, or the restoration of essential services, such as evacuation, rescue, medical, structural firefighting, law enforcement, utilities, and communications, when employees are engaged in those operations.

(b) The following workplaces and operations are partially exempt from these rules:

(A) Employers whose employees perform either "rest" or "light" workloads (See Table 1 under section 1 in Appendix A, Information for Heat Illness Prevention) are exempt from the requirements of sections (3) through (10) only when the heat index is less than 90 degrees Fahrenheit.

(B) Associated support activities for wildland firefighters such as fire camp services and fire management are exempt only from the requirements of section (7).

(C) Employees who work from home are subject only to the training requirements in sections (9) and (10).

(2) Definitions

(a) Acclimatization - Temporary adaptation of the body to work in the heat that occurs gradually when a person is exposed to it. Acclimatization peaks in most people within seven to fourteen days of regular work for at least two hours per day in the heat. This time frame applies to fit individuals with no underlying medical conditions.

(b) Drinking water - Potable water that is suitable to drink and that is cool (66 °F – 77 °F) or cold (35 °F – 65 °F). Drinking water packaged as a consumer product and electrolyte-replenishing beverages that do not contain caffeine (for example, sports drinks) are acceptable substitutes, but should not completely replace required water supplies.

(c) Feasibility - The ability of an employer to implement any requirement in a rule. Oregon OSHA rules never prohibit work. Whether feasibility is mentioned in a provision of the rule or not, if the employer can demonstrate that it is functionally impossible to comply, or if doing so would prevent completion of the work, the employer need not comply, but must take any available reasonable alternative steps to protect the employees involved.

(d) Heat Illnesses - Medical conditions resulting from the body's inability to cope with a particular heat load, and includes heat cramps, heat exhaustion, heat syncope, and heat stroke.

(e) Shade - Blockage of direct sunlight is shade. One indicator that blockage is sufficient is when objects do not cast a shadow in the area of blocked sunlight. Shade is not adequate when heat in the area of shade defeats the purpose of shade, which is to allow the body to cool. For example, a car sitting in the sun does not provide acceptable shade to a person inside it, unless the car is running with a working air conditioning. Shade may be provided by any natural or artificial means that does not expose employees to unsafe or unhealthy conditions, and that does not deter or discourage access or use.

(3) Access to shade. Establish and maintain one or more shade areas that are immediately and readily available to exposed employees that are outdoors when the heat index in the work area equals or exceeds 80 degrees Fahrenheit. The shade areas must meet the following criteria:

(a) The shade area must either be open to the outside air (at least three open sides) or provide mechanical ventilation for cooling.

(b) The amount of shade present must be at least enough to accommodate the number of employees on recovery or rest period, so that they can sit in a normal posture fully in the shade. Employees must remove any PPE that retains heat (such as chemical resistant suits) during recovery and rest periods.

(c) The shade must be located as close as practical to the areas where employees are working.

(d) Shade present during meal periods must be large enough to accommodate the number of employees on the meal period that remain onsite.

(e) If trees or other vegetation are used to provide shade (such as in orchards or forests), ensure the thickness and shape of the shaded area provides sufficient shadow to protect employees.

Exception: When the employer can demonstrate that providing access to shade is not safe or feasible in a particular situation (for example, during high winds or when an employee is walking through range land), employers must identify and implement alternative cooling measures that provide equivalent protection such as providing cooling vests (either with fans or ice packs), water-dampened cotton clothing, or similar effective measures. The Heat Illness Prevention Plan under section (8) must address the use, care, and maintenance of the alternative cooling methods, in writing.

(4) Drinking water. Ensure that an adequate supply of drinking water is immediately and readily available to exposed employees at all times, at no cost, when the heat index in the work area equals or exceeds 80 degrees Fahrenheit.

(a) Supplied drinking water must be either cool or cold, see subsection (2)(b).

(b) Supply each employee with enough drinking water to enable them to consume up to 32 ounces per hour. Employers are not required to supply the entire quantity of drinking water needed for all employees on a full shift at the beginning of the shift. Employers may begin the shift with smaller quantities of drinking water when effective procedures are established to replenish the water consumed during the shift.

(c) Ensure that employees have ample opportunity to drink water required under this section.

(5) High heat practices - When engineering controls (such as fans or air conditioning) or administrative controls (such as scheduling work during the cooler part of the day or limiting an employee's exposure) do not reduce an employee's exposure to an ambient heat index of less than 90 degrees Fahrenheit, implement and maintain high heat practices and procedures by following subsections (5)(a) through (e) below.

(a) Ensure that effective communication occurs, in a language and vocabulary readily understood by all employees, by voice, electronic, or other equally-

effective means, so that employees at the worksite can contact a supervisor at any time, when necessary. An electronic device, such as a cell phone, may be used for this purpose only if reception in the area is constant and reliable.

(b) Implement one or more of the following to promptly identify any employee suspected of experiencing heat-related illness:

(A) Regular communication with employees working alone, such as by radio, cellular phone, or other alternative means;

(B) Create a mandatory buddy system, when feasible; or

(C) Implement other equally effective means of observation or communication.

(c) Designate and equip one or more employees at each worksite as authorized to call for emergency medical services, and allow other employees to call for emergency services when designated employees are not immediately available; such a practice supplements existing requirement to ensure that emergency medical care is immediately available in all workplaces, per Division 2, Subdivision K, OAR 437-002-0161: Medical and First Aid.

(d) When employees work in buildings and structures that do not have a mechanical ventilation cooling system, employers must:

(A) Directly measure the temperature and humidity in these places at the same time and location when occupied by employees to determine the current indoor heat index;

(B) Use the National Institute for Occupational Safety and Health's (NIOSH) Heat Safety Tool app to determine the heat index outside of the building or structure and assume that it is the same inside. (See section 2 in Appendix A, Information for Heat Illness Prevention); or

(C) If the structure is designed or otherwise known to be affected by outdoor humidity (for example, hoop houses and greenhouses in nursery operations), the employer must measure and use the actual humidity inside the structure.

(e) Develop and implement a written heat illness prevention work/rest schedule that effectively protects employees exposed to a heat index equal to or greater than 90 degrees Fahrenheit, by following (5)(e)(A), (B), or (C) below.

(A) Implement a written, employer-specific heat illness prevention work/rest schedule using the minimum rest break durations and intervals in Table 1 below, that is employer-adjusted to effectively protect employees from heat illness when considering the elements in and the information in subsections (5)(e)(A)(i) through (iv) below.

Table 1. Minimum employer-specific rest break durations and intervals:

<u>Heat index temperature (° F)</u>	<u>Rest break durations</u>
<u>90 or greater</u>	<u>10 minutes every two hours</u>
<u>100 or greater</u>	<u>15 minutes every hour</u>

- (i) The effect of personal protective equipment (PPE) on the body's ability to retain heat;
- (ii) The effect of the type of work clothing on the body's ability to retain heat;
- (iii) Relative humidity, whether work activities are indoors or outdoors; and
- (iv) The intensity of the work being performed.

(B) Implement an effective heat illness prevention work/rest schedule using the information found in section 3 of Appendix A, Information for Heat Illness Prevention.

Note: The NIOSH work/rest schedule uses unadjusted ambient temperatures (in degrees Fahrenheit), and employers must follow the instructions underneath Table 2 in section 3.A in Appendix A, Information for Heat Illness Prevention. Employers must be aware that different work/rest schedules exist for those wearing chemical-resistant suits; see Table 3 in section 3.B in Appendix A, Information for Heat Illness Prevention.

(C) Implement a written simplified heat illness prevention work/rest work rest schedule using Table 2 below.

Table 2. Minimum simplified rest break durations and intervals:

<u>Heat index temperature (° F)</u>	<u>Rest break durations</u>
<u>90 or greater</u>	<u>10 minutes every two hours</u>
<u>95 or greater</u>	<u>20 minutes every hour</u>
<u>100 or greater</u>	<u>30 minutes every hour</u>
<u>105 or greater</u>	<u>40 minutes every hour</u>

Note: The Table 2 work/rest schedule is only required during the specified heat index temperatures.

Note: Preventative rest breaks under subsection (5)(e) are only required during the specified heat index temperatures, and may be provided concurrently with any other meal or rest period required by policy, rule or law, if the timing of the preventative rest break coincides with the

otherwise required meal or rest period. However, the preventative rest break must be calculated using only the time spent in the shade and when employees are not performing work other than light work such as that performed in an office setting. Except when preventative rest breaks coincide with the existing unpaid meal break, the preventative rest break is a work assignment and must be compensated accordingly. Preventative rest breaks are only required during the time of the shift that the ambient heat index equals or exceeds 90 degrees Fahrenheit.

(6) Emergency Medical Plan. The employer's Emergency Medical Plan must address employee exposure to excessive heat, in accordance with OAR 437-002-0042.

(7) Acclimatization Plan. Develop and implement effective acclimatization procedures and plans in writing. Such plans must be effective in preventing heat-related illnesses. Employers must choose between option (7)(a) or (7)(b) below.

(a) Employers who develop their own acclimatization plan must consider:

(A) Acclimated and unacclimated workers;

(B) The effects of clothing and personal protective equipment on adding to the heat burden of workers;

(C) The personal and environmental risk factors that put workers at a higher risk of heat-related illness;

(D) Re-acclimatizing workers as necessary (either due to changes in the weather or a worker spending more than seven days away from the job);

(E) The use and maintenance of auxiliary cooling systems such as water-cooled garments, air-cooled garments, cooling vests, and wetted overgarments, or

(b) Employers that choose not to develop their own acclimatization plan must follow the acclimatization plan developed by the Centers for Disease Control and Prevention and NIOSH; see section 4, Appendix A, Information for Heat Illness Prevention.

Note: Oregon OSHA recognizes that there is no "one-size-fits-all" acclimatization plan, based upon the variable weather patterns across the state. Employers should be aware that acclimatization to heat takes longer for unfit individuals compared to fit individuals.

(8) Heat Illness Prevention Plan. Develop, implement, and maintain an effective heat illness prevention plan, in writing. The plan must be made available at the worksite to employees and to Oregon OSHA upon request. The plan must contain at least the following information:

(a) How employees will be trained on the hazards of heat exposure and the necessary steps to prevent heat-related illnesses;

(b) How to recognize the symptoms of dehydration, and how to respond to suspected heat-related illnesses in others.

(c) How adequate amounts of cool, potable water in work areas will be provided;

(d) How employees will be provided frequent opportunities and encouragement to stay hydrated by drinking water;

(e) How employees will be provided adequate space to rest in a shaded area, or cool climate-controlled area, and where heat-affected employees may cool off and recover when signs and symptoms of heat-related illnesses are recognized;

(f) How the employer will implement a work/rest schedule when necessary to keep employees safe; and

(g) How the employer will implement heat acclimatization procedures for new employees or employees returning to work from extended absences of seven or more days.

(9) Supervisor and employee training. Provide heat illness prevention training to all employees, including new employees, supervisory and non-supervisory employees in a language and vocabulary readily understood, and in a manner that facilitates employee feedback. Such training must be provided annually before employees begin work that should reasonably be anticipated to expose them to the risk of heat illness, and include at least the following:

(a) The environmental and personal risk factors (for example, chronic obstructive pulmonary disease, asthma, kidney disease, obesity, etc.) for heat illness that may limit an individual's tolerance to excessive heat, as well as the added burden of heat load on the body caused by exertion, clothing (See section 5 in Appendix A, Information for Heat Illness Prevention), and personal protective equipment;

(b) The employer's procedures for complying with the requirements of this standard, including, but not limited to, the employer's responsibility to provide water, heat index information (including the risks to experiencing a heat-related illness), shade, preventative rest breaks, and access to first aid, as well as how employees can exercise their rights under this standard without fear of retaliation;

(c) The importance of frequent consumption of small quantities of water, up to 32 ounces per hour, when the work environment is hot and employees are likely to be sweating more than usual in the performance of their duties;

(d) The concept, importance, and methods of the acclimatization plan pursuant to the employer's procedures under section (8);

(e) The different types of heat illness, the common signs and symptoms of heat illness, and the appropriate first aid and emergency response to the different types of heat illness, including how heat illness may progress quickly from mild signs and symptoms to a serious and life-threatening condition.

(f) The importance for employees to immediately report to the employer, directly or through the employee's supervisor, signs and symptoms of heat illness in themselves or in others ; and

(g) The effects of nonoccupational factors (drugs, alcohol, obesity, etc.) on tolerance to occupational heat stress.

(10) Training documentation. Verify compliance with section (9) by preparing and maintaining written or electronic training records that can be provided to Oregon OSHA upon request. Such records must contain the name or identification of each employee trained, the date(s) of the training, and the name of the person who conducted the training. The most recent annual training record for each affected employee must be maintained.

Statutory/Other Authority: ORS 654.025(2), 654.035 & 656.726(4)

Statutes Implemented: ORS 654.001 through 654.295

History: OSHA X-20XX, adopt filed XX/XX/XXXX, effective XX/XX/XXXX

OAD 437-002-0156

Appendix A
Information for Heat Illness Prevention

To protect the health and safety of employees from heat-related illnesses, employers should consider using the resources below. Please note that some resources may use temperatures in Celsius instead of Fahrenheit. To convert to degrees Fahrenheit, use this formula: Fahrenheit (°F) = (Celsius x 1.8) + 32

1. Most heat-related illnesses affect workers who do strenuous physical activity. When workers engage in intense work, their bodies create heat. This "metabolic" heat combines with environmental heat (from temperature, sunlight, humidity, etc.) so workers' core temperature can rise to dangerous levels. To prevent a hazardous combination of environmental and metabolic heat, employers should be aware of workers' activity level. Workload can be classified as rest, light, moderate, heavy, or very heavy. See information provided in the tab on Metabolic Heat and Workload (Physical Activity level) for additional detail on estimating worker's workload.

Table 1. Metabolic Heat and Workload (Physical Activity Level)

<u>Level of Workload / Physical Activity *</u>	<u>Examples</u>	<u>Metabolic Rate in Watts, "typical" recognizing that different ways of doing the same task may lead to dramatically different wattage</u>
<u>Rest</u>	<ul style="list-style-type: none">• <u>Sitting</u>• <u>Thinking</u>	<u>115</u>
<u>Light</u>	<ul style="list-style-type: none">• <u>Sitting with minimal hand and arm work</u>• <u>Sewing</u>• <u>Writing or drawing</u>• <u>Driving a car</u>• <u>Occasional or slow walking</u>• <u>Stooping, crouching, or kneeling</u>• <u>Standing watch</u>	<u>180</u>

* Workers who are overweight or obese might produce more metabolic heat than other workers who perform the same tasks. The above table assumes a 70-kg (154-pound) worker.

Table 1 was partially recreated from federal OSHA's guidance on Heat Hazard recognition, which can be accessed at: <https://www.osha.gov/heat-exposure/hazards>.

2. The OSHA-NIOSH Heat Safety Tool app is a useful resource for planning outdoor work activities based on how hot it feels throughout the day. It features real-time heat index and hourly forecasts specific to your location, as well as occupational safety and health recommendations from OSHA and NIOSH. It can be accessed and downloaded at: <https://www.osha.gov/heat/heat-app>

3. Work/rest schedules.

A. Table 2. Work/rest schedules for workers wearing normal work clothing*

<u>Adjusted temperature (°F)[†]</u>	<u>Light work (minutes work/rest)</u>	<u>Moderate work (minutes work/rest)</u>	<u>Heavy work (minutes work/rest)</u>
90	Normal	Normal	Normal
91	Normal	Normal	Normal
92	Normal	Normal	Normal
93	Normal	Normal	Normal
94	Normal	Normal	Normal
95	Normal	Normal	45/15
96	Normal	Normal	45/15
97	Normal	Normal	40/20
98	Normal	Normal	35/25
99	Normal	Normal	35/25
100	Normal	45/15	30/30
101	Normal	40/20	30/30
102	Normal	35/25	25/35
103	Normal	30/30	20/40
104	Normal	30/30	20/40
105	Normal	25/35	15/45
106	45/15	20/40	Caution [‡]
107	40/20	15/45	Caution [‡]
108	35/25	Caution [‡]	Caution [‡]
109	30/30	Caution [‡]	Caution [‡]
110	15/45	Caution [‡]	Caution [‡]
111	Caution [‡]	Caution [‡]	Caution [‡]
112	Caution [‡]	Caution [‡]	Caution [‡]

*With the assumption that workers are physically fit, well-rested, fully hydrated, under age 40, and have adequate water intake and that there is 30% RH [relative humidity] and natural ventilation with perceptible air movement.

[†]Note: Adjust the temperature reading as follows before going to the temperature column in the table: Full sun (no clouds): Add 13°

Partly cloudy/overcast: Add 7°

No shadows visible/work is in the shade or at night: no adjustment

Per relative humidity:

10%: Subtract 8°

20%: Subtract 4°

30%: No adjustment

40%: Add 3'
 50%: Add 6'
 60%: Add 9'

*High levels of heat stress; consider rescheduling activities.

Adapted from EPA [1993]

Table 2 above was recreated from the following publication; see page 76 in NIOSH [2016]. *NIOSH criteria for a recommended standard: occupational exposure to heat and hot environments.* By Jacklitsch B, Williams WJ, Musolin K, Coca A, Kim J-H, Turner N. Cincinnati, OH: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, DHHS (NIOSH) Publication 2016-106.

B. Table 3. Work/rest schedules for those wearing chemical resistant suits.

Air Temp (°F)	Light work			Moderate work			Heavy work		
	Full sun	Partly cloudy	No sun [†]	Full sun	Partly cloudy	No sun [†]	Full sun	Partly cloudy	No sun [†]
75	Normal	Normal	Normal	Normal	Normal	Normal	35/25 [‡]	Normal	Normal
80	30/30	Normal	Normal	20/40	Normal	Normal	10/50	40/20	Normal
85	15/45	40/20	Normal	10/50	25/35	Normal	Caution [§]	15/45	40/20
90	Caution [§]	15/45	40/20	Caution [§]	Caution [§]	25/35	Stop work	Caution [§]	15/45
95	Stop work	Stop work	15/45	Stop work	Stop work	Stop work	Stop work	Stop work	Stop work

[†]With the assumption that workers are heat-acclimatized, under the age of 40, physically fit, well-rested, fully hydrated, and wearing Tyvek coveralls, gloves, boots, and a respirator. Cooling vests may enable workers to work for longer periods. Adjustments must be made when additional protective gear is worn.

[‡]No shadows are visible or work is in the shade or at night.

[‡]35 minutes work and 25 minutes rest each hour.

[§]High levels of heat stress; consider rescheduling activities.

Adapted from EPA [1993]

Table 3 above was recreated from the following publication; see page 77 in NIOSH [2016]. *NIOSH criteria for a recommended standard: occupational exposure to heat and hot environments.* By Jacklitsch B, Williams WJ, Musolin K, Coca A, Kim J-H, Turner N. Cincinnati, OH: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, DHHS (NIOSH) Publication 2016-106.

4. Acclimatization.

Table 4. Acclimatization in workers

<u>Topics</u>	<u>Additional information</u>
<u>Disadvantages of being unacclimatized</u>	<ul style="list-style-type: none"> • <u>Readily show signs of heat stress when exposed to hot environments.</u> • <u>Difficulty replacing all of the water lost in sweat.</u> • <u>Failure to replace the water lost will slow or prevent acclimatization.</u>
<u>Benefits of acclimatization</u>	<ul style="list-style-type: none"> • <u>Increased sweating efficiency (earlier onset of sweating, greater sweat production, and reduced electrolyte loss in sweat).</u> • <u>Stabilization of the circulation.</u> • <u>Work is performed with lower core temperature and heart rate.</u> • <u>Increased skin blood flow at a given core temperature.</u>
<u>Acclimatization plan</u>	<ul style="list-style-type: none"> • <u>Gradually increase exposure time in hot environmental conditions over a period of 7 to 14 days.</u> • <u>For new workers, the schedule should be no more than 20% of the usual duration of work in the hot environment on day 1 and a no more than 20% increase on each additional day.</u> • <u>For workers who have had previous experience with the job, the acclimatization regimen should be no more than 50% of the usual duration of work in the hot environment on day 1, 60% on day 2, 80% on day 3, and 100% on day 4.</u> • <u>The time required for non-physically fit individuals to develop acclimatization is about 50% greater than for the physically fit.</u>
<u>Level of acclimatization</u>	<ul style="list-style-type: none"> • <u>Relative to the initial level of physical fitness and the total</u>

	<u>heat stress experienced by the individual.</u>
<u>Maintaining acclimatization</u>	<ul style="list-style-type: none"> • <u>Can be maintained for a few days of non-heat exposure.</u> • <u>Absence from work in the heat for a week or more results in a significant loss in the beneficial adaptations leading to an increased likelihood of acute dehydration, illness, or fatigue.</u> • <u>Can be regained in 2 to 3 days upon return to a hot job.</u> • <u>Appears to be better maintained by those who are physically fit.</u> • <u>Seasonal shifts in temperatures may result in difficulties.</u> • <u>Working in hot, humid environments provides adaptive benefits that also apply in hot, desert environments, and vice versa.</u> • <u>Air conditioning will not affect acclimatization.</u>

Adapted from [Moseley 1994; Armstrong and Stoppani 2002; DOD 2003; Casa et al. 2009; ACGIH 2014; OSHA-NIOSH 2011].

Table 4 above was recreated from the following publication; see page 34. NIOSH [2016]. NIOSH criteria for a recommended standard: occupational exposure to heat and hot environments. By Jacklitsch B, Williams WJ, Musolin K, Coca A, Kim J-H, Turner N. Cincinnati, OH: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, DHHS (NIOSH) Publication 2016-106.

5. Clothing adjustment factors.

Table 5. Clothing adjustment factors exist for various types of clothing.

<u>Clothing adjustment factors</u>		
<u>(°C-WBGT)</u>		
<u>Clothing</u>	<u>Previous</u>	<u>2006</u>
<u>Work clothing (baseline)</u>	0	0
<u>Cloth coveralls</u>	3.5	0

Double-layer cloth clothing	5	3
Spunbound melt-blown synthetic (SMS) coveralls	-	
0.5		
Polyolefin coveralls	-	1
Limited-use vapor-barrier coveralls	-	
11		

Adapted from Bernard TE, Threshold Limit Values for Physical Agents Committee, ACGIH [2014].

Table 5 above was recreated from the following publication; see page 19. NIOSH [2016]. *NIOSH criteria for a recommended standard: occupational exposure to heat and hot environments*. By Jacklitsch B, Williams WJ, Musolin K, Coca A, Kim J-H, Turner N. Cincinnati, OH: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, DHHS (NIOSH) Publication 2016-106.

Heat Illness Prevention 437-004-1131

(1) Scope and Application. This standard applies whenever an employee performs work activities, whether in indoor or outdoor environments, where the heat index (apparent temperature) equals or exceeds 80 degrees Fahrenheit.

Note: When another applicable standard addresses a non-heat related hazard that may be present, employers must comply with the requirements of that standard and this standard. Where the requirements of one standard are more restrictive than another for the same hazard, employers must follow the requirements that provides the higher level of employee protection.

Note: Buildings and structures that have a mechanical ventilation system that keeps the heat index temperature below 80 degrees Fahrenheit are exempt from the requirements of these rules.

(a) The following workplaces and operations are exempt from these rules:

(A) Incidental heat exposures where an employee is not required to perform work activities for more than 15 minutes in any sixty-minute period.

(B) Exposures to heat generated from the work process – such as occurs in foundries – is not subject to this standard. In such cases, employers must follow the requirements of Division 2, Subdivision J, OAR 437-002-0144(2).

(C) All emergency operations that are directly involved in the protection of life or property, or the restoration of essential services, such as evacuation, rescue, medical, structural firefighting, law enforcement, utilities, and communications, when employees are engaged in those operations.

(b) The following workplaces and operations are partially exempt from these rules:

(A) Employers whose employees perform either “rest” or “light” workloads (See Table 1 under section 1 in Appendix A, Information for Heat Illness Prevention) are exempt from the requirements of sections (3) through (10) only when the heat index is less than 90 degrees Fahrenheit.

(B) Associated support activities for wildland firefighters such as fire camp services and fire management are exempt only from the requirements of section (7).

(C) Employees who work from home are subject only to the training requirements in sections (9) and (10).

(2) Definitions

(a) Acclimatization - Temporary adaptation of the body to work in the heat that occurs gradually when a person is exposed to it. Acclimatization peaks in most

people within seven to fourteen days of regular work for at least two hours per day in the heat. This time frame applies to fit individuals with no underlying medical conditions.

(b) Drinking water - Potable water that is suitable to drink and that is cool (66 °F - 77 °F) or cold (35 °F - 65 °F). Drinking water packaged as a consumer product and electrolyte-replenishing beverages that do not contain caffeine (for example, sports drinks) are acceptable substitutes, but should not completely replace required water supplies.

(c) Feasibility - The ability of an employer to implement any requirement in a rule. Oregon OSHA rules never prohibit work. Whether feasibility is mentioned in a provision of the rule or not, if the employer can demonstrate that it is functionally impossible to comply, or if doing so would prevent completion of the work, the employer need not comply, but must take any available reasonable alternative steps to protect the employees involved.

(d) Heat Illnesses - Medical conditions resulting from the body's inability to cope with a particular heat load, and includes heat cramps, heat exhaustion, heat syncope, and heat stroke.

(e) Shade - Blockage of direct sunlight is shade. One indicator that blockage is sufficient is when objects do not cast a shadow in the area of blocked sunlight. Shade is not adequate when heat in the area of shade defeats the purpose of shade, which is to allow the body to cool. For example, a car sitting in the sun does not provide acceptable shade to a person inside it, unless the car is running with a working air conditioning. Shade may be provided by any natural or artificial means that does not expose employees to unsafe or unhealthy conditions, and that does not deter or discourage access or use.

(3) Access to shade. Establish and maintain one or more shade areas that are immediately and readily available to exposed employees that are outdoors when the heat index in the work area equals or exceeds 80 degrees Fahrenheit. The shade areas must meet the following criteria:

(a) The shade area must either be open to the outside air (at least three open sides) or provide mechanical ventilation for cooling.

(b) The amount of shade present must be at least enough to accommodate the number of employees on recovery or rest period, so that they can sit in a normal posture fully in the shade. Employees must remove any PPE that retains heat (such as chemical resistant suits) during recovery and rest periods.

(c) The shade must be located as close as practical to the areas where employees are working.

(d) Shade present during meal periods must be large enough to accommodate the number of employees on the meal period that remain onsite.

(e) If trees or other vegetation are used to provide shade (such as in orchards or forests), ensure the thickness and shape of the shaded area provides sufficient shadow to protect employees.

Exception: When the employer can demonstrate that providing access to shade is not safe or feasible in a particular situation (for example, during high winds or when an employee is walking through range land), employers must identify and implement alternative cooling measures that provide equivalent protection such as providing cooling vests (either with fans or ice packs), water-dampened cotton clothing, or similar effective measures. The Heat Illness Prevention Plan under section (8) must address the use, care, and maintenance of the alternative cooling methods, in writing.

(4) Drinking water. Ensure that an adequate supply of drinking water is immediately and readily available to exposed employees at all times, at no cost, when the heat index in the work area equals or exceeds 80 degrees Fahrenheit.

(a) Supplied drinking water must be either cool or cold, see subsection (2)(b).

(b) Supply each employee with enough drinking water to enable them to consume up to 32 ounces per hour. Employers are not required to supply the entire quantity of drinking water needed for all employees on a full shift at the beginning of the shift. Employers may begin the shift with smaller quantities of drinking water when effective procedures are established to replenish the water consumed during the shift.

(c) Ensure that employees have ample opportunity to drink water required under this section.

(5) High heat practices - When engineering controls (such as fans or air conditioning) or administrative controls (such as scheduling work during the cooler part of the day or limiting an employee's exposure) do not reduce an employee's exposure to an ambient heat index of less than 90 degrees Fahrenheit, implement and maintain high heat practices and procedures by following subsections (5)(a) through (e) below.

(a) Ensure that effective communication occurs, in a language and vocabulary readily understood by all employees, by voice, electronic, or other equally-effective means, so that employees at the worksite can contact a supervisor at any time, when necessary. An electronic device, such as a cell phone, may be used for this purpose only if reception in the area is constant and reliable.

(b) Implement one or more of the following to promptly identify any employee suspected of experiencing heat-related illness:

(A) Regular communication with employees working alone, such as by radio, cellular phone, or other alternative means;

(B) Create a mandatory buddy system, when feasible; or

(C) Implement other equally effective means of observation or communication.

(c) Designate and equip one or more employees at each worksite as authorized to call for emergency medical services, and allow other employees to call for emergency services when designated employees are not immediately available; such a practice supplements existing requirement to ensure that emergency medical care is immediately available in all workplaces, per Division 2, Subdivision K, OAR 437-002-0161: Medical and First Aid.

(d) When employees work in buildings and structures that do not have a mechanical ventilation cooling system, employers must:

(A) Directly measure the temperature and humidity in these places at the same time and location when occupied by employees to determine the current indoor heat index;

(B) Use the National Institute for Occupational Safety and Health's (NIOSH) Heat Safety Tool app to determine the heat index outside of the building or structure and assume that it is the same inside. (See section 2 in Appendix A, Information for Heat Illness Prevention); or

(C) If the structure is designed or otherwise known to be affected by outdoor humidity (for example, hoop houses and greenhouses in nursery operations), the employer must measure and use the actual humidity inside the structure.

(e) Develop and implement a written heat illness prevention work/rest schedule that effectively protects employees exposed to a heat index equal to or greater than 90 degrees Fahrenheit, by following (5)(e)(A), (B), or (C) below.

(A) Implement a written, employer-specific heat illness prevention work/rest schedule using the minimum rest break durations and intervals in Table 1 below, that is employer-adjusted to effectively protect employees from heat illness when considering the elements in and the information in subsections (5)(e)(A)(i) through (iv) below.

Table 1. Minimum employer-specific rest break durations and intervals:

<u>Heat index temperature (° F)</u>	<u>Rest break durations</u>
<u>90 or greater</u>	<u>10 minutes every two hours</u>
<u>100 or greater</u>	<u>15 minutes every hour</u>

- (v) The effect of personal protective equipment (PPE) on the body's ability to retain heat;
- (vi) The effect of the type of work clothing on the body's ability to retain heat;
- (vii) Relative humidity, whether work activities are indoors or outdoors; and

(viii) The intensity of the work being performed.

(B) Implement an effective heat illness prevention work/rest schedule using the information found in section 3 of Appendix A, Information for Heat Illness Prevention.

Note: The NIOSH work/rest schedule uses unadjusted ambient temperatures (in degrees Fahrenheit), and employers must follow the instructions underneath Table 2 in section 3.A in Appendix A, Information for Heat Illness Prevention. Employers must be aware that different work/rest schedules exist for those wearing chemical-resistant suits; see Table 3 in section 3.B in Appendix A, Information for Heat Illness Prevention.

(C) Implement a written simplified heat illness prevention work/rest work rest schedule using Table 2 below.

Table 2. Minimum simplified rest break durations and intervals:

<u>Heat index temperature (° F)</u>	<u>Rest break durations</u>
<u>90 or greater</u>	<u>10 minutes every two hours</u>
<u>95 or greater</u>	<u>20 minutes every hour</u>
<u>100 or greater</u>	<u>30 minutes every hour</u>
<u>105 or greater</u>	<u>40 minutes every hour</u>

Note: The Table 2 work/rest schedule is only required during the specified heat index temperatures.

Note: Preventative rest breaks under subsection (5)(e) are only required during the specified heat index temperatures, and may be provided concurrently with any other meal or rest period required by policy, rule or law, if the timing of the preventative rest break coincides with the otherwise required meal or rest period. However, the preventative rest break must be calculated using only the time spent in the shade and when employees are not performing work other than light work such as that performed in an office setting. Except when preventative rest breaks coincide with the existing unpaid meal break, the preventative rest break is a work assignment and must be compensated accordingly. Preventative rest breaks are only required during the time of the shift that the ambient heat index equals or exceeds 90 degrees Fahrenheit.

(6) Emergency Action Plan. The employer's Emergency Action Plan must address employee exposure to excessive heat, in accordance with OAR 437-004-0450.

(7) Acclimatization Plan. Develop and implement effective acclimatization procedures and plans in writing. Such plans must be effective in preventing heat-related illnesses. Employers must choose between option (7)(a) or (7)(b) below.

(a) Employers who develop their own acclimatization plan must consider:

(A) Acclimated and unacclimated workers;

(B) The effects of clothing and personal protective equipment on adding to the heat burden of workers;

(C) The personal and environmental risk factors that put workers at a higher risk of heat-related illness;

(D) Re-acclimatizing workers as necessary (either due to changes in the weather or a worker spending more than seven days away from the job);

(E) The use and maintenance of auxiliary cooling systems such as water-cooled garments, air-cooled garments, cooling vests, and wetted overgarments, or

(b) Employers that choose not to develop their own acclimatization plan must follow the acclimatization plan developed by the Centers for Disease Control and Prevention and NIOSH; see section 4, Appendix A, Information for Heat Illness Prevention.

Note: Oregon OSHA recognizes that there is no "one-size-fits-all" acclimatization plan, based upon the variable weather patterns across the state. Employers should be aware that acclimatization to heat takes longer for unfit individuals compared to fit individuals.

(8) Heat Illness Prevention Plan. Develop, implement, and maintain an effective heat illness prevention plan, in writing. The plan must be made available at the worksite to employees and to Oregon OSHA upon request. The plan must contain at least the following information:

(a) How employees will be trained on the hazards of heat exposure and the necessary steps to prevent heat-related illnesses;

(b) How to recognize the symptoms of dehydration, and how to respond to suspected heat-related illnesses in others.

(c) How adequate amounts of cool, potable water in work areas will be provided;

(d) How employees will be provided frequent opportunities and encouragement to stay hydrated by drinking water;

(e) How employees will be provided adequate space to rest in a shaded area, or cool climate-controlled area, and where heat-affected employees may cool off and recover when signs and symptoms of heat-related illnesses are recognized;

(f) How the employer will implement a work/rest schedule when necessary to keep employees safe; and

(g) How the employer will implement heat acclimatization procedures for new employees or employees returning to work from extended absences of seven or more days.

(9) Supervisor and employee training. Provide heat illness prevention training to all employees, including new employees, supervisory and non-supervisory employees in a language and vocabulary readily understood, and in a manner that facilitates employee feedback. Such training must be provided annually before employees begin work that should reasonably be anticipated to expose them to the risk of heat illness, and include at least the following:

(a) The environmental and personal risk factors (for example, chronic obstructive pulmonary disease, asthma, kidney disease, obesity, etc.) for heat illness that may limit an individual's tolerance to excessive heat, as well as the added burden of heat load on the body caused by exertion, clothing (See section 5 in Appendix A, Information for Heat Illness Prevention), and personal protective equipment;

(b) The employer's procedures for complying with the requirements of this standard, including, but not limited to, the employer's responsibility to provide water, heat index information (including the risks to experiencing a heat-related illness), shade, preventative rest breaks, and access to first aid, as well as how employees can exercise their rights under this standard without fear of retaliation;

(c) The importance of frequent consumption of small quantities of water, up to 32 ounces per hour, when the work environment is hot and employees are likely to be sweating more than usual in the performance of their duties;

(d) The concept, importance, and methods of the acclimatization plan pursuant to the employer's procedures under section (8);

(e) The different types of heat illness, the common signs and symptoms of heat illness, and the appropriate first aid and emergency response to the different types of heat illness, including how heat illness may progress quickly from mild signs and symptoms to a serious and life-threatening condition.

(f) The importance for employees to immediately report to the employer, directly or through the employee's supervisor, signs and symptoms of heat illness in themselves or in others ; and

(g) The effects of nonoccupational factors (drugs, alcohol, obesity, etc.) on tolerance to occupational heat stress.

(10) Training documentation. Verify compliance with section (9) by preparing and maintaining written or electronic training records that can be provided to Oregon OSHA upon request. Such records must contain the name or identification of each

employee trained, the date(s) of the training, and the name of the person who conducted the training. The most recent annual training record for each affected employee must be maintained.

Statutory/Other Authority: ORS 654.025(2), 654.035 & 656.726(4)

Statutes Implemented: ORS 654.001 through 654.295

History: OSHA X-20XX, adopt filed XX/XX/XXXX, effective XX/XX/XXXX

OAR 437-004-1131

Appendix A
Information for Heat Illness Prevention

To protect the health and safety of employees from heat-related illnesses, employers should consider using the resources below. Please note that some resources may use temperatures in Celsius instead of Fahrenheit. To convert to degrees Fahrenheit, use this formula: Fahrenheit (°F) = (Celsius x 1.8) + 32

1. Most heat-related illnesses affect workers who do strenuous physical activity. When workers engage in intense work, their bodies create heat. This "metabolic" heat combines with environmental heat (from temperature, sunlight, humidity, etc.) so workers' core temperature can rise to dangerous levels. To prevent a hazardous combination of environmental and metabolic heat, employers should be aware of workers' activity level. Workload can be classified as rest, light, moderate, heavy, or very heavy. See information provided in the tab on Metabolic Heat and Workload (Physical Activity level) for additional detail on estimating worker's workload.

Table 1. Metabolic Heat and Workload (Physical Activity Level)

<u>Level of Workload / Physical Activity *</u>	<u>Examples</u>	<u>Metabolic Rate in Watts, "typical" recognizing that different ways of doing the same task may lead to dramatically different wattage</u>
<u>Rest</u>	<ul style="list-style-type: none">• <u>Sitting</u>• <u>Thinking</u>	<u>115</u>
<u>Light</u>	<ul style="list-style-type: none">• <u>Sitting with minimal hand and arm work</u>• <u>Sewing</u>• <u>Writing or drawing</u>• <u>Driving a car</u>• <u>Occasional or slow walking</u>• <u>Stooping, crouching, or kneeling</u>• <u>Standing watch</u>	<u>180</u>

* Workers who are overweight or obese might produce more metabolic heat than other workers who perform the same tasks. The above table assumes a 70-kg (154-pound) worker.

Table 1 was partially recreated from federal OSHA's guidance on Heat Hazard recognition, which can be accessed at: <https://www.osha.gov/heat-exposure/hazards>.

2. The OSHA-NIOSH Heat Safety Tool app is a useful resource for planning outdoor work activities based on how hot it feels throughout the day. It features real-time heat index and hourly forecasts specific to your location, as well as occupational safety and health recommendations from OSHA and NIOSH. It can be accessed and downloaded at: <https://www.osha.gov/heat/heat-app>

3. Work/rest schedules.

A. Table 2. Work/rest schedules for workers wearing normal work clothing*

Adjusted temperature (°F) [†]	Light work (minutes work/rest)	Moderate work (minutes work/rest)	Heavy work (minutes work/rest)
90	Normal	Normal	Normal
91	Normal	Normal	Normal
92	Normal	Normal	Normal
93	Normal	Normal	Normal
94	Normal	Normal	Normal
95	Normal	Normal	45/15
96	Normal	Normal	45/15
97	Normal	Normal	40/20
98	Normal	Normal	35/25
99	Normal	Normal	35/25
100	Normal	45/15	30/30
101	Normal	40/20	30/30
102	Normal	35/25	25/35
103	Normal	30/30	20/40
104	Normal	30/30	20/40
105	Normal	25/35	15/45
106	45/15	20/40	Caution [‡]
107	40/20	15/45	Caution [‡]
108	35/25	Caution [‡]	Caution [‡]
109	30/30	Caution [‡]	Caution [‡]
110	15/45	Caution [‡]	Caution [‡]
111	Caution [‡]	Caution [‡]	Caution [‡]
112	Caution [‡]	Caution [‡]	Caution [‡]

*With the assumption that workers are physically fit, well-rested, fully hydrated, under age 40, and have adequate water intake and that there is 30% RH [relative humidity] and natural ventilation with perceptible air movement.

[†]Note: Adjust the temperature reading as follows before going to the temperature column in the table: Full sun (no clouds): Add 13°

Partly cloudy/overcast: Add 7°

No shadows visible/work is in the shade or at night: no adjustment

Per relative humidity:

10%: Subtract 8°

20%: Subtract 4°

30%: No adjustment

40%: Add 3°
 50%: Add 6°
 60%: Add 9°

‡High levels of heat stress; consider rescheduling activities.

Adapted from EPA [1993]

Table 2 above was recreated from the following publication; see page 76 in NIOSH [2016]. *NIOSH criteria for a recommended standard: occupational exposure to heat and hot environments*. By Jacklitsch B, Williams WJ, Musolin K, Coca A, Kim J-H, Turner N. Cincinnati, OH: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, DHHS (NIOSH) Publication 2016-106.

B. Table 3. Work/rest schedules for those wearing chemical resistant suits.

<u>Air Temp (°F)</u>	<u>Light work</u>			<u>Moderate work</u>			<u>Heavy work</u>		
	<u>Full sun</u>	<u>Partly cloudy</u>	<u>No sun†</u>	<u>Full sun</u>	<u>Partly cloudy</u>	<u>No sun†</u>	<u>Full sun</u>	<u>Partly cloudy</u>	<u>No sun†</u>
<u>75</u>	<u>Normal</u>	<u>Normal</u> ↓	<u>Normal</u> ↓	<u>Normal</u>	<u>Normal</u>	<u>Normal</u> ↓	<u>35/25‡</u>	<u>Normal</u>	<u>Normal</u> ↓
<u>80</u>	<u>30/30</u>	<u>Normal</u> ↓	<u>Normal</u> ↓	<u>20/40</u>	<u>Normal</u>	<u>Normal</u> ↓	<u>10/50</u>	<u>40/20</u>	<u>Normal</u> ↓
<u>85</u>	<u>15/45</u>	<u>40/20</u>	<u>Normal</u> ↓	<u>10/50</u>	<u>25/35</u>	<u>Normal</u> ↓	<u>Caution[§]</u>	<u>15/45</u>	<u>40/20</u>
<u>90</u>	<u>Caution[§]</u>	<u>15/45</u>	<u>40/20</u>	<u>Caution[§]</u>	<u>Caution[§]</u>	<u>25/35</u>	<u>Stop work</u>	<u>Caution[§]</u>	<u>15/45</u>
<u>95</u>	<u>Stop work</u>	<u>Stop work</u>	<u>15/45</u>	<u>Stop work</u>	<u>Stop work</u>	<u>Stop work</u>	<u>Stop work</u>	<u>Stop work</u>	<u>Stop work</u>

†With the assumption that workers are heat-acclimatized, under the age of 40, physically fit, well-rested, fully hydrated, and wearing Tyvek coveralls, gloves, boots, and a respirator. Cooling vests may enable workers to work for longer periods. Adjustments must be made when additional protective gear is worn.

‡No shadows are visible or work is in the shade or at night.

‡35 minutes work and 25 minutes rest each hour.

§High levels of heat stress; consider rescheduling activities.

Adapted from EPA [1993]

Table 3 above was recreated from the following publication; see page 77 in NIOSH [2016]. *NIOSH criteria for a recommended standard: occupational exposure to heat and hot environments*. By Jacklitsch B, Williams WJ, Musolin K, Coca A, Kim J-H, Turner N. Cincinnati, OH: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, DHHS (NIOSH) Publication 2016-106.

4. Acclimatization.

Table 4. Acclimatization in workers

<u>Topics</u>	<u>Additional information</u>
<u>Disadvantages of being unacclimatized</u>	<ul style="list-style-type: none">• <u>Readily show signs of heat stress when exposed to hot environments.</u>• <u>Difficulty replacing all of the water lost in sweat.</u>• <u>Failure to replace the water lost will slow or prevent acclimatization.</u>
<u>Benefits of acclimatization</u>	<ul style="list-style-type: none">• <u>Increased sweating efficiency (earlier onset of sweating, greater sweat production, and reduced electrolyte loss in sweat).</u>• <u>Stabilization of the circulation.</u>• <u>Work is performed with lower core temperature and heart rate.</u>• <u>Increased skin blood flow at a given core temperature.</u>
<u>Acclimatization plan</u>	<ul style="list-style-type: none">• <u>Gradually increase exposure time in hot environmental conditions over a period of 7 to 14 days.</u>• <u>For new workers, the schedule should be no more than 20% of the usual duration of work in the hot environment on day 1 and a no more than 20% increase on each additional day.</u>• <u>For workers who have had previous experience with the job, the acclimatization regimen should be no more than 50% of the usual duration of work in the hot environment on day 1, 60% on day 2, 80% on day 3, and 100% on day 4.</u>• <u>The time required for non-physically fit individuals to develop acclimatization is about 50% greater than for the physically fit.</u>
<u>Level of acclimatization</u>	<ul style="list-style-type: none">• <u>Relative to the initial level of physical fitness and the total</u>

	<u>heat stress experienced by the individual.</u>
<u>Maintaining acclimatization</u>	<ul style="list-style-type: none"> • <u>Can be maintained for a few days of non-heat exposure.</u> • <u>Absence from work in the heat for a week or more results in a significant loss in the beneficial adaptations leading to an increased likelihood of acute dehydration, illness, or fatigue.</u> • <u>Can be regained in 2 to 3 days upon return to a hot job.</u> • <u>Appears to be better maintained by those who are physically fit.</u> • <u>Seasonal shifts in temperatures may result in difficulties.</u> • <u>Working in hot, humid environments provides adaptive benefits that also apply in hot, desert environments, and vice versa.</u> • <u>Air conditioning will not affect acclimatization.</u>

Adapted from [Moseley 1994; Armstrong and Stoppani 2002; DOD 2003; Casa et al. 2009; ACGIH 2014; OSHA-NIOSH 2011].

Table 4 above was recreated from the following publication; see page 34. NIOSH [2016]. *NIOSH criteria for a recommended standard: occupational exposure to heat and hot environments*. By Jacklitsch B, Williams WJ, Musolin K, Coca A, Kim J-H, Turner N. Cincinnati, OH: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, DHHS (NIOSH) Publication 2016-106.

5. Clothing adjustment factors.

Table 5. Clothing adjustment factors exist for various types of clothing.

<u>Clothing adjustment factors</u>		
<u>(°C-WBGT)</u>		
<u>Clothing</u>	<u>Previous</u>	<u>2006</u>
<u>Work clothing (baseline)</u>	0	0
<u>Cloth coveralls</u>	3.5	0

Double-layer cloth clothing	5	3
Spunbound melt-blown synthetic (SMS) coveralls	-	
0.5		
Polyolefin coveralls	-	1
Limited-use vapor-barrier coveralls	-	
11		

Adapted from Bernard TE, Threshold Limit Values for Physical Agents Committee, ACGIH [2014].

Table 5 above was recreated from the following publication; see page 19. NIOSH [2016]. *NIOSH criteria for a recommended standard: occupational exposure to heat and hot environments*. By Jacklitsch B, Williams WJ, Musolin K, Coca A, Kim J-H, Turner N. Cincinnati, OH: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, DHHS (NIOSH) Publication 2016-106.

OAR 437-004-1120 Agricultural Labor Housing and Related Facilities.

(1) Application.

- (a) These rules apply to any place, or area of land, where there are living areas, manufactured or prefabricated homes or dwellings or other housing provided by a farmer, farm labor contractor, agricultural employer or other person in connection with the recruitment of workers on an agricultural establishment.
- (b) These rules apply to any type of labor housing and related facilities together with the tract of land, established, or to be established, operated or maintained for housing workers with or without families whether or not rent is paid or collected.
- (c) Manufactured dwellings and homes must comply with specifications for construction of sleeping places, unless they comply with ORS 446.155 to 446.185 and OAR 918-500-0020(2) that have the requirements and specifications for sanitation and safety design for manufactured dwellings.
- (d) These rules apply to housing given to, rented, leased to or otherwise provided to employees for use while employed and provided or allowed either by the employer, a representative of the employer or a housing operator.
- (e) These rules, unless otherwise stated, apply to all occupants of the labor housing and facilities.
- (f) These rules apply to all labor housing sites owned, operated, or allowed to operate on property under the jurisdiction of any state or municipal authority.
- (g) Violations relating to the occupants' personal housekeeping practices in facilities that are not common use will not result in citations to the employer.
- (h) For the purposes of OAR 437-004-1120, labor contractors as defined in ORS 658.405 are employers.

(2) These rules do not apply to:

- (a) hotels or motels that provide similar housing commercially to the public on the same terms as they do to workers.
- (b) accommodations subject to licensing as manufactured dwelling parks, organizational camps, traveler's accommodations or recreation vehicle parks and open to the general public on the same terms.
- (c) manufactured homes or dwellings being moved regularly from place to place because of the work when at parks or camps meant for parking mobile vehicles and open to the general public on the same terms.

(3) Charging occupants for required services. Operators may not charge for services required by this rule (OAR 437-004-1120). This prohibits pay-per-use toilets, pay-per-use bathing facilities or any other method of paying for individual service requirements.

(4) Definitions.

- (a) Clean means the absence of soil or dirt or removal of soil or dirt by washing, sweeping, clearing away, or any method appropriate to the material at hand.
- (b) Common use facilities are those for use by occupants of more than one housing unit or by occupants of dormitory-style housing.
- (c) Common use cooking and eating facility is a shared area for occupants to store, prepare, cook, and eat their own food.
- (d) Dining hall is an eating place with food furnished by and prepared under the direction of the operator for consumption, with or without charge, of the occupants.
- (e) Facility means a living area, drinking water installation, toilet installation, sewage disposal installation, food handling installation, or other installation required for compliance with the labor housing and related facility rules.
- (f) Garbage means food wastes, food packaging materials or any refuse that has been in contact with food stuffs.
- (g) Housing site is a place where there are living areas.
- (h) Livestock operation is any place, establishment or facility with pens or other enclosures in which livestock is kept for purposes including, but not limited to, feeding, milking, slaughter, watering, weighing, sorting, receiving, and shipping. Livestock operations include, among other things, dairy farms, corrals, slaughterhouses, feedlots, and stockyards. Operations where livestock can roam on a pasture over a distance are outside this definition.
- (i) Living area is any room, structure, shelter, tent, manufactured home or dwelling or prefabricated structure, vehicle or other place housing one or more persons.
- (j) Manufactured dwelling is a residential trailer, built before January 1, 1962, for movement on the highway, that has sleeping, cooking and plumbing facilities; or, a mobile home, constructed for movement on the highway, that has sleeping, cooking and plumbing facilities, built between January 1, 1962 and June 15, 1976 and meeting the requirements of Oregon mobile home law in effect at the time of construction.
- (k) Manufactured home is a structure built for movement on the highway that has sleeping, cooking and plumbing facilities and is used as a residence. Built on or after June 15, 1976 to comply with federal manufactured housing standards and regulations in effect at the time of construction. More information on these definitions is in ORS 446.003(26).
- (l) Operator means any person or company that operates labor housing and/or related facilities.
- (m) Potable water is water meeting the bacteriological and other requirements of the Public Health Division of the Oregon Department of Human Services.

(n) Prefabricated structure means a building or subassembly which has been in whole or substantial part manufactured or assembled using closed construction at an off-site location to be wholly or partially assembled on-site; but does not include a manufactured home or dwelling. Prefabricated structures are manufactured in accordance with the Oregon state building code and rules adopted by the Building Codes Division of the Oregon Department of Consumer and Business Services in OAR 918-674.

(o) Privy is the same as outhouse or pit toilet but is not the same as portable toilets.

(p) Recyclable material means containers that are returnable for refund of a deposit or materials gathered as part of a recycling program.

(q) Refuse includes waste materials such as paper, metal, discarded items, as well as debris, litter and trash.

(r) Sanitary means free from agents that may be injurious to health.

(s) Sewage means the water-carried human and animal wastes, including kitchen, bath, and laundry wastes from residences, buildings, industrial establishments, or other places, together with such ground-water infiltration, surface waters, or industrial wastes as may be present.

(t) Toilet room is a room in or on the premises of any labor housing, with toilet facilities for use by employees and occupants of that housing.

(5) Housing registration requirements.

(a) ORS 658.705~~0~~ requires the operator of Agricultural Labor Housing and Related Facilities to register such housing with Oregon OSHA as in (b) below, except the following as defined by ORS 658.705:

(A) Housing occupied solely by members of the same family,

(B) Housing occupied by five or fewer unrelated persons, ~~and~~or

(C) Housing on operations that do not produce or harvest farm crops (Oregon OSHA considers "production of crops" to mean production of farm crops for sale").

(b) Each year, before occupancy, the operator or employer must register agricultural labor housing and related facilities with Oregon OSHA as set out below.

(A) The operator must contact Oregon OSHA at least 45 days before the first day of operation or occupancy of the housing and related facilities. Instructions and additional information will come later by mail.

(B) If the housing and related facilities were not registered in the previous year, the operator must call Oregon OSHA to request a consultation visit to the housing. Oregon OSHA will register housing and related facilities not previously registered only after a pre-occupancy consultation that finds the

housing or facility to be substantially in compliance with all applicable safety and health rules.

(C) If there were significant changes in the circumstances of the housing or facilities since the last registration, Oregon OSHA may, at its discretion, refer the employer for a consultation prior to re-registering the housing and facilities.

(D) Once registered, the operator must display the registration certificate provided by Oregon OSHA in a place frequented by employees. The operator must also provide and display a translation of the certificate in the language or languages used to communicate with employees.

(c) The Director of the Department of Consumer and Business Services or designee may revoke a labor housing and related facilities registration if Oregon OSHA determines that any of the following apply:

(A) The application had any negligent or willful material misrepresentation, or false statement.

(B) The conditions under which the registration was accepted no longer exist or have changed.

(C) The housing and related facilities are not substantially in compliance with the applicable safety and health rules.

(d) When Oregon OSHA revokes the registration of agricultural labor housing and related facilities, operators or their agents have 30 days to file a written appeal. On receipt of such appeal, the Director of the Department of Consumer and Business Services will hold a contested case hearing on that appeal under ORS 183.413, et seq.

(e) Any group or individual may protest the proposed registration, continued registration or renewal of any labor housing and related facilities registration under the following conditions:

(A) The signed and dated protest must be submitted in writing and received by the Director before issuance of the registration or renewal.

(B) The protest must include the name, address and phone number of the individual or group filing it.

(C) The protest must clearly identify which housing and related facilities is the subject of the protest, including the exact physical location and name of the applicant.

(D) The protest must clearly state the facts and reasons for the protest. Such facts and reasons must be based on factors that are within the scope of ORS 654, 658.705 through 658.850 and any relevant regulations.

(E) When the above provisions are met, such group or individual may participate in the contested case as a party or limited party under OAR 137-003-0005.

(6) Site requirements:

- (a) The grounds of labor housing and related facilities must be substantially free from waste water, sewage, garbage, recyclable material, refuse or noxious plants such as poison oak and poison ivy.
 - (b) During housing occupancy, grass, weeds and brush must be cut back at least 30 feet from buildings.
 - (c) All housing site land must have adequate drainage. The site must not be subject to flooding when occupied.
 - (d) Adequately dispose of the waste water and food waste under outside water hydrants.
 - (e) The operator of labor housing is responsible for the maintenance and operation of the housing and its facilities.
 - (f) Store all toxic materials such as pesticides, fertilizers, paints and solvents in a safe place.
 - (g) Do not leave empty pesticide containers such as drums, bags, cans, or bottles in the housing area.
 - (h) Prevent or control the breeding of mosquitoes, flies, and rodents in the immediate housing area and within 200 feet of any labor housing and related facilities owned or under lawful control or supervision of the operator.
 - (i) Do not locate labor housing within 500 feet of livestock operations unless the employees in the housing are employed to tend or otherwise work with the animals.
- ~~NOTE~~**Note:** This does not apply to animals owned by the housing occupants.
- (j) Provide electricity to all housing units and related facilities. Subdivision 4/S, Electricity applies to ALH.
 - (k) Extension cords or plug strips must have circuit breaker or fuse protection either as part of the set or part of the building wiring.
 - (l) Facilities built or remodeled before December 15, 1989, must have a ceiling or wall-type electric light fixture in working order and at least one wall-type electrical outlet in every living area. Facilities built or remodeled after that date must comply with the code in effect at the time of construction or remodeling.
 - (m) Provide a ceiling or wall-type electric light in toilet rooms, lavatories, shower or bathing rooms, laundry rooms, hallways, stairways, the common eating area or other hazardous dark areas.
 - (n) Light privies either directly or indirectly from an outside light source.

- (o) Provide enough light in corridors and walkways to allow safe travel at night.
- (p) Each housing site must have its street numbers displayed to be easily visible to responding emergency vehicles on public highways or roads.
- (q) The lowest point of wooden floor structures must be at least 12 inches above ground.

(7) Water supply.

- (a) All domestic water furnished at labor housing and related facilities must conform to the standards of the Public Health Division of the Oregon Department of Human Services. ~~(A)~~ The site water system must supply at least 15 psi at the outlet end of all water lines regardless of the number of outlets in use.
- (b) Have a bacteriological analysis done on the water before occupancy and as often as needed to assure a potable water supply, except when the water comes from a community water system.
- (c) Provide enough potable water in the labor housing area for drinking, hand washing, bathing and domestic use. An ample supply is at least 35 gallons of water per day per occupant.
- (d) Arrange, construct and if necessary, periodically disinfect the water storage and distribution facilities to satisfactorily protect the water from contamination. Install all new plumbing in labor housing and related facilities to comply with the Oregon state building code.
- (e) When potable water is not available in each dwelling unit, there must be a potable water source within 100 feet of each unit and there must be a working, clean drinking fountain for each 100 occupants or fraction thereof.
- (f) Post as, "Unsafe for drinking," non-potable water that is accessible to occupants. The posting must be in the language of the camp occupants or with a universal symbol.
- (g) Portable water containers with spigots and tight fitting lids are acceptable for providing and storing drinking water in the housing.
 - (A) These containers must be made of impervious non-toxic materials that protect the water from contamination.
 - (B) Wash and sanitize them at least every 7 days.
- (h) Do not use containers such as barrels, pails or tanks that require dipping or pouring to get the water.
- (i) Do not use cups, dippers or other utensils for common drinking purposes.
- (j) Do not allow cross connection between a system furnishing water for drinking purposes and a non-potable supply.

(8) Bathing, hand washing, laundry, and toilet facilities — General.

(a) Provide an adequate supply of hot and cold water under pressure for all common use bathing, hand washing, and laundry facilities at all labor housing and related facilities.

(b) In installations with bathing, laundry facilities, or flush toilets, the floor and walls must be of readily cleanable finish and impervious to moisture.

(c) All common use bathing, hand washing, and laundry facilities must be clean, sanitary and operating properly.

(d) Buildings for common use bathing, hand washing, laundry, and toilet facilities must have heating capable of keeping the facility at 68 degrees or more during use.

(9) Bathing facilities.

(a) Provide drains in all showers to remove waste water. Slope floors so they drain. Do not use slippery materials for flooring.

~~NOTE: Paragraph (b) is effective April 1, 2009. Until then the old ratio of 1 to 15 applies.~~

(b) Provide at least one shower head with hot and cold water under pressure for every 10 occupants or fraction thereof. ~~(A)~~ Unisex shower rooms are acceptable in the same ratios. They must have working locks and provide privacy.

(c) Separate common use bathing facilities used for both sexes in the same building by a solid, non-absorbent wall extending from the floor to the ceiling.

(d) Mark separate sex bathing facilities, if provided, with "women" and "men" in English and in the native language of employees expected to occupy the housing or with easily understood pictures or symbols.

(10) Hand washing facilities.

~~NOTE: Paragraph (a) is effective April 1, 2009. Until then the old ratio of 1 to 15 applies.~~

(a) Provide at least one hand washing sink or basin with hot and cold water under pressure for every 6 occupants or fraction thereof. Each 24 linear inches of "trough" type sink with individual faucets counts as one basin. When each living unit does not have hand washing facilities, locate common use facilities either close to the toilet facilities or close to the sleeping places.

(b) In common use facilities, do not use a single common towel. If you provide paper towels, there must be a container for their disposal.

(11) Laundry facilities.

~~NOTE: Paragraph (a) is effective April 1, 2009. Until then the old rule applies which reads: 437-004-1120(11)~~

~~(a) When public laundry and drying facilities are not available within 5 miles, the housing must have readily accessible laundry and drying facilities.~~

~~(b) Laundry facilities in the housing area must have trays or tubs, plumbed with hot and cold water in the ratio of 1 for each 25 occupants.~~

~~(c) Mechanical washers are optional in the ratio of 1 to 50 occupants with one laundry tray per 100 occupants.~~

~~(d)~~(a) Provide laundry trays, tubs, or machines with plumbed hot and cold water in the combined ratio of 1 for each 30 occupants or each part of 30.

~~(e)~~(b) Provide clothes lines or drying facilities to serve the needs of the occupants.

~~(f)~~(c) Laundry rooms must have drains to remove waste water.

~~(g)~~(d) Each common use laundry room must have a slop sink.

(12) Toilet facilities.

(a) Locate toilet facilities in labor housing and related facilities within 200 feet from the living area that they serve.

(b) Locate toilets, chemical toilets, or urinals in rooms built for that purpose.

(c) Maintain a usable, unobstructed path or walkway free of weeds, debris, holes or standing water from each living area to the common use toilet facilities.

(d) Provide at least one toilet for every 15 occupants or fraction thereof for each gender in the labor housing. Toilets must assure privacy:

(A) If urinals are in the toilet facility and where three or more toilets are required for men, one urinal substitutes for one toilet (24 inches of trough-type urinal equals one urinal), to a maximum of one-third of the total required toilets.

(B) Existing urinals must be non-absorbent, non-corrosive materials that have a smooth and cleanable finish. Urinals installed after the effective date of this standard must meet Oregon state building code.

(C) If there are no common use toilet facilities, calculate the required ratio without regard to gender.

(e) Clean common use toilet facilities daily or more often when needed to maintain sanitation.

(f) Mark separate sex toilet facilities, when provided, with "women" and "men" in English and in the native language of employees expected to occupy the housing or with easily understood pictures or symbols.

(g) Ventilate all labor housing toilet rooms according to the Oregon state building code.

(h) Separate common use toilet facilities used for both sexes in the same building by a solid, non-absorbent wall extending from the floor to the ceiling.

(i) Install privacy partitions between each individual toilet or toilet seat in multiple toilet facilities. The partitions may be less than the height of the room walls:

(A) The top of the partition must be not less than 6 feet from the floor and the bottom of the partition not more than 1-foot from the floor. The width of the partition must extend at least 1 1/2 feet beyond the front of the toilet seat.

(B) Provide a door or curtain so the toilet compartment is private.

(j) Provide common use toilet facilities with toilet paper and holders or dispensers. Also provide disposal containers with lids.

(k) Do not allow obstruction of the path or access to a toilet room. If access is through another room, that room must not be lockable.

(13) Portable toilets, chemical toilets and privies.

(a) The location and construction of privies must conform to Oregon Department of Environmental Quality standards.

(b) Privies must be at least 100 feet from any living area or any facility where food is prepared or served.

(c) Portable toilets and privies must have adequate lighting.

(d) When in use, service portable and chemical toilets at least weekly or often enough to keep them from becoming a health hazard. Clean portable toilets, chemical toilets and privies at least daily.

(14) Sewage disposal and plumbing.

(a) Connect the sewer lines from the labor housing and related facilities to a community sewer system, a septic tank with subsurface disposal of the effluent, pit type privies or other sanitary means conforming to Department of Environmental Quality standards.

(b) Install all plumbing in labor housing and related facilities to comply with Department of Environmental Quality standards and the Oregon state building code.

(15) Garbage and refuse disposal outside of buildings.

NOTERecyclable material is not garbage or refuse referred to in this section (15).

(a) Keep refuse and garbage containers clean and in good repair.

(b) Provide at least one 30-gallon or larger container per 15 occupants. Containers must be inside the housing site area and accessible to all occupants.

(c) Empty garbage bins and dumpsters at least weekly during use, but always before they become a health hazard or full enough to interfere with full closing of the lid.

(d) Empty common use cans and portable containers into a bin or dumpster, when full or twice weekly whichever is more frequent. Do not allow garbage on the ground.

(e) Keep all refuse and garbage containers covered and the garbage storage area clean to control flies and rodents.

(f) Do not burn any food, garbage or wet refuse.

(g) Dispose of garbage and refuse according to Department of Environmental Quality standards that govern the disposal of garbage, refuse and other solid wastes.

(16) Living areas.

(a) Keep all living areas, safe and in good repair structurally and stable on their foundations. They must provide shelter for the occupants against the elements and protect the occupants from ground and surface water as well as rodents and insects.

(b) The walls and roof must be tight and solid. Floors must be rigid and durable, with a smooth and cleanable finish in good repair.

(c) For living areas without a working permanent heating system or heaters, the ALH operator must supply portable heaters at no cost to the occupant. These heaters must be capable of keeping the temperature in the living area at a minimum of 68 degrees. Heaters must meet these requirements:

(A) Operate by electricity only.

(B) Have working safety devices installed by the manufacturer for the particular type heater.

(C) Be in good working order with no defects or alterations that make them unsafe.

(d) Permanently installed solid fuel or gas fired heaters must meet the following:

(A) Install and vent any stoves or other sources of heat that use combustible fuel to prevent fire hazards and dangerous concentration of gases:

(i) Solid or liquid fuel heaters or stoves installed on or before December 15, 1989, must sit on a concrete slab, insulated metal sheet or other fire resistant material when used in a room with wood or other combustible flooring. Extend it at least 18 inches beyond the perimeter of the base of the stove.

(ii) Solid or liquid fuel heaters or stoves must meet the manufacturer's specifications and the Oregon state building code in effect at the time of installation.

(B) Install fire resistant material on any wall or ceiling within 18 inches of a solid or liquid fuel stove or a stove pipe. Provide a vented metal collar around the stovepipe, or vent passing through a wall, ceiling, floor or roof or combustible material.

(C) Heating systems with automatic controls must cut off the fuel supply on failure or interruption of the flame or ignition, or when they exceed a pre-determined safe temperature or pressure.

(D) All gas appliances and gas piping must comply with the Oregon state building code in effect at time of installation and the manufacturer's instructions.

(E) Do not locate stoves so they block escape from a sleeping place.

(e) Provide screens of at least 16 mesh on the doors and windows of the living area. All screen doors must be tight-fitting, in good repair, and self-closing.

(f) Provide beds, bunks or cots for each occupant and suitable storage facilities, such as wall cabinets or shelves, for each occupant or family unit.

(A) The camp operator must provide a mattress or pad for each bed or bunk.

(iB) If you provide foam pads, they must be thicker than 2 inches.

(iiC) Do not provide uncovered foam pads.

(iiiD) Mattresses or pads must not sit on the floor.

(ivE) The sleeping surface must be at least 12 inches above the floor.

(g) Mattresses or pads furnished by the camp operator must be clean, in good repair, and free from insects and parasites.

(A) Fumigate mattresses or pads, used uncovered, or treat with an effective insecticide before each season's occupancy. If you provide covers, clean them before each season's occupancy.

(B) Store mattresses or pads in a clean, dry place.

(h) Space the beds, bunks or cots so that there is enough room to allow for rapid and safe exiting during an emergency.

NOTE: Do not count children 2 years old and younger when calculating square footage requirements in paragraphs (i), (j), (k), and (l).

(i) In living areas built after August 1, 1975, where workers cook, live, and sleep, provide at least 100 square feet per occupant.

(j) In living areas built before August 1, 1975, where workers cook, live and sleep, provide at least 60 square feet per occupant.

(k) Each sleeping room without double bunk beds must have at least 50 square feet of floor space per employee. Where there are double bunk beds, provide 40 square feet per occupant. Do not use triple bunks.

(l) Beginning on January 1, 2018 all agricultural labor housing, where workers cook, live and sleep in the same area, must provide 100 square feet per occupant.

(m) For units built after April 3, 1980 at least one-half the required floor space in each living area must have a minimum ceiling height of 7 feet. Floor space with a ceiling height less than 5 feet does not count toward the minimum required floor space.

(n) Beginning on January 1, 2018 only areas with a 7 foot ceiling height will count toward the required square footage of any living or sleeping area. Housing built or remodeled between January 26, 2009 and January 1, 2018 must have minimum 7 foot high ceilings for the space to count toward any required square footage.

(o) Provide separate private sleeping areas for unrelated persons of each sex and for each family unit.

~~NOTE: Paragraph (p) is effective April 1, 2009.~~

(p) Provide windows or skylights with a total area equal to at least 10 percent of the required floor area. At least one-half (nominal) the total required window or skylight area must be openable to the outside. Adequate mechanical ventilation may substitute for openable window space. Not more than one-half the required space can be met with skylights. Openable, screened windows in doors count toward this requirement.

(q) Before occupancy clean all living areas and eliminate any rodents, insects, and animal parasites.

(17) Fire protection.

(a) All fires must be in equipment designed for that use. Do not allow open fires within 25 feet of structures.

(b) Each season, at the time of initial occupancy, each living area must have a working approved smoke detector.

~~NOTE~~**Note:** The camp operator is not responsible for daily maintenance of the detector or the actions of occupants that defeat its function.

(c) Provide fire extinguishing equipment in a readily accessible place, not more than 50 feet from each housing unit. The equipment must provide protection equal to a 2A:10BC rated extinguisher.

~~NOTE~~**Note:** Hoses are acceptable substitutes for extinguishers only if the water supply is constant and reliable. Hoses must be immediately available for firefighting use.

(d) All living areas with more than one room, built before December 15, 1989, with one door, must have, in addition to a door, a window in each sleeping room that can be an exit in case of fire:

(A) This window must have an openable space at least 24 inches by 24 inches, nominal.

(B) The lowest portion of the opening must be less than 48 inches above the floor.

(C) This window must open directly to the outdoors and be readily openable by the occupants from inside without breaking the glass.

(D) Label the escape window as an emergency exit.

(e) Living areas built on or after December 15, 1989, must meet the requirements for emergency exits in applicable rules of the Building Codes Division of the Oregon Department of Consumer and Business Services, ~~including the following:~~ (E). Required emergency exit windows in sleeping rooms must have a clear net opening of at least 5.7 square feet, minimum vertical opening of 22 inches and minimum horizontal opening of 20 inches.

NOTE: Construct and maintain all living areas in labor housing and related facilities to comply with other applicable local and state laws and regulations in effect at the time of construction or remodel.

(f) A second story must have at least two exits when its occupant load is 10 or more. Comply with the Oregon state building code.

(g) Occupants on floors above the second story and in basements must have access to at least two separate exits from the floor or basement as required by the Oregon state building code.

(18) Common use cooking and eating facilities and equipment.

(a) When provided, common use cooking or food preparation facilities or equipment must have the following:

(A) A gas or electric refrigerator, capable of keeping food at or below 41 degrees F.

(B) A minimum equivalent of two cooking burners for every 10 persons or part thereof, or 2 families, whichever requires the most burners. (i) If a gas or electric hotplate or wood stove is within 18 inches of a wall, that wall must be made of or finished with smooth cleanable, nonabsorbent, grease-resistant and fire-resistant material.

NOTE: Labeled and listed appliances are exempt from the 18-inch requirement when installed according to their listing.

(C) No liquid petroleum gas (LPG like propane) tanks in use inside any occupied building. Outside tanks must connect to appliances with lines approved for that purpose.

(D) Food storage shelves, food preparation areas, food contact surfaces and floors in food preparation and serving areas must be made of or finished with smooth, non-absorbent, cleanable material; and

(E) A table and chairs or equivalent seating and eating arrangements to accommodate the number of occupants living in the sleeping place.

(b) Refrigerators and stoves or hot plates must always be in working condition.

- (c) Clean the facilities and equipment before each occupancy.
- (d) Common use kitchen and dining areas must be separate from all sleeping quarters. There can be no direct opening between kitchen or dining areas and any living or sleeping area.
- (e) If the operator becomes aware of or has reason to suspect that anybody preparing, cooking or serving food has a communicable disease as listed in paragraph (22), the operator must bar them from the cooking facility until the disease is no longer communicable.
- (f) Buildings must have heating capable of keeping the facility at 68 degrees or more during use.
- (g) Facilities must be in buildings or shelters. Doors, windows and openings, if any, must have screens of 16 mesh or smaller.

(19) Dining halls and equipment.

- (a) When provided, dining halls or equipment must have the following:

- (A) A gas or electric refrigerator, capable of keeping food at or below 41 degrees F.

- (B) A minimum equivalent of two cooking burners for every 10 persons or part thereof, 2 families, whichever requires the most burners. (i) If a gas or electric hotplate or wood stove is within 18 inches of a wall, that wall must be made of or finished with smooth cleanable, nonabsorbent, grease-resistant and fire-resistant material.

Note NOTE: Labeled and listed appliances are exempt from the 18-inch requirement when installed according to their listing.

- (C) No liquid petroleum gas (LPG like propane) tanks in use inside any occupied building. Outside tanks must connect to appliances with lines approved for that purpose.

- (D) Food storage shelves, food preparation areas, food contact surfaces and floors in food preparation and serving areas must be made of or finished with smooth, non-absorbent, cleanable material; and

- (E) A table and chairs or equivalent seating and eating arrangements to accommodate the number of occupants living in the sleeping place.

- (b) Refrigerators and stoves or hot plates must always be in working condition.

- (c) Clean the facilities and equipment before each occupancy.

- (d) Common use kitchen and dining areas must be separate from all sleeping quarters. There can be no direct opening between kitchen or dining areas and any living or sleeping area.

(e) If the operator becomes aware of or has reason to suspect that anybody preparing, cooking or serving food has a communicable disease as listed in paragraph (22), the operator must bar them from the cooking facility until the disease is no longer communicable.

(f) Buildings must have heating capable of keeping the facility at 68 degrees or more during use.

(g) The facility must comply with the 2005 edition of the FDA Food Code.

NOTE: Follow Division 4, Agriculture when it differs from the FDA Food Code. The code is available at: <http://www.cfsan.fda.gov/~dms/foodcode.html> <https://www.fda.gov/food/fda-food-code/food-code-2005> or contact the Oregon OSHA Resource Center at 800-922-2689 or in Salem 503-378-3272.

(h) Facilities must be in buildings or shelters. Doors, windows and openings, if any, must have screens of 16 mesh or smaller.

(20) Single unit cooking facilities.

(a) When provided, single unit cooking, eating and dining facilities or equipment must have the following:

(A) A gas or electric refrigerator, capable of keeping food at or below 41 degrees F.

(B) A minimum equivalent of two burners for cooking for every 10 persons or part thereof, or 2 families, whichever requires the most burners. (i) If a gas or electric hotplate or wood stove is within 18 inches of a wall, that wall must be made of or finished with smooth cleanable, nonabsorbent, grease-resistant and fire resistant material.

NOTE: Labeled and listed appliances are exempt from the 18-inch requirement when installed according to their listing.

(C) No liquid petroleum gas (LPG like propane) tanks in use inside. Outside tanks must connect to appliances with lines approved for that purpose.

(D) Food storage shelves, food preparation areas, food contact surfaces and floors in food preparation and serving areas made of or finished with smooth, non-absorbent, cleanable material.

(E) A table and chairs or equivalent seating and eating arrangements to accommodate the number of occupants living in the sleeping place.

(F) A refrigerator and stove or hot plate in working condition.

(b) Clean the facilities before each occupancy.

(21) First aid. OAR 437-004-1305, Medical and First Aid, applies to all labor housing and related facilities. This rule includes requirements for first aid supplies, an emergency medical plan and a plan of communication.

~~NOTE~~**Note:** Division 4/K requires all employees know about the first aid requirements and emergency medical plans. If employees' native language is other than English, this must be taken into account in meeting this requirement.

(22) Disease Reporting. The camp operator must comply with Oregon Health Authority's OAR 333-018-0000; ~~Who Must Report~~ **Is Responsible for Reporting** and OAR 333-018-0015; ~~What~~ **Is To Be Reported** And ~~When~~; ~~333-018-0000 Who Must Report~~.

~~(23)~~ **Note:** Each Health Care Provider knowing of or attending a case or suspected case of any of the diseases, infections, or conditions listed in OAR 333-018-0015 shall report such cases as specified. Where no Health Care Provider is in attendance, any individual knowing of such a case shall report in a similar manner. ~~333-018-0015 What to Report and When~~.

(24) **Note: Human** reportable diseases, infections, microorganisms, and conditions, and the time frames within which they must be reported are as follows:

(a) Immediately, day or night: Bacillus anthracis (anthrax); Clostridium botulinum (botulism); Corynebacterium diphtheriae (diphtheria); Severe Acute Respiratory Syndrome (SARS) and infection by SARS-coronavirus; Yersinia pestis (plague); intoxication caused by marine microorganisms or their byproducts (for example, paralytic shellfish poisoning, domoic acid intoxication, ciguatera, scombroid); any known or suspected common-source Outbreaks; any Uncommon Illness of Potential Public Health Significance.

(b) Within 24 hours (including weekends and holidays): Haemophilus influenzae (any invasive disease; for laboratories, any isolation or identification from a normally sterile site); measles (rubeola); Neisseria meningitidis (any invasive disease; for laboratories, any isolation or identification from a normally sterile site); Pesticide Poisoning; poliomyelitis; rabies (human or animal); rubella; Vibrio (all species).

(c) Within one Local Public Health Authority working day: Bordetella pertussis (pertussis); Borrelia (relapsing fever, Lyme disease); Brucella (brucellosis); Campylobacter (campylobacteriosis); Chlamydophila (Chlamydia) psittaci (psittacosis); Chlamydia trachomatis (chlamydiosis; lymphogranuloma venereum); Clostridium tetani (tetanus); Coxiella burnetii (Q fever); Creutzfeldt-Jakob disease and other transmissible spongiform encephalopathies; Cryptosporidium (cryptosporidiosis); Cyclospora cayetanensis (cyclosporiasis); Escherichia coli (Shiga-toxigenic, including E. coli O157 and other serogroups); Francisella tularensis (tularemia); Giardia (giardiasis); Haemophilus ducreyi (chancroid); hantavirus; hepatitis A; hepatitis B (acute or chronic infection); hepatitis C; hepatitis D (delta); HIV infection (does not apply to anonymous testing) and AIDS; Legionella (legionellosis); Leptospira (leptospirosis); Listeria monocytogenes (listeriosis); mumps; Mycobacterium tuberculosis and M. bovis (tuberculosis); Neisseria gonorrhoeae (gonococcal infections); pelvic inflammatory disease (acute, non-gonococcal); Plasmodium (malaria); Rickettsia (all species: Rocky Mountain spotted fever, typhus, others); Salmonella (salmonellosis, including typhoid); Shigella (shigellosis); Taenia solium (including cysticercosis and undifferentiated Taenia infections); Treponema pallidum (syphilis); Trichinella (trichinosis); Yersinia (other than pestis); any infection that is

typically arthropod vector-borne (for example: Western equine encephalitis, Eastern equine encephalitis, St. Louis encephalitis, dengue, West Nile fever, yellow fever, California encephalitis, ehrlichiosis, babesiosis, Kyasanur Forest disease, Colorado tick fever, etc.); human bites by any other mammal; CD4 cell count < 200/ μ L (mm³) or CD4 proportion of total lymphocytes < 14%; hemolytic uremic syndrome.

(d) Within 7 days: Suspected Lead Poisoning (for laboratories; this includes all blood lead tests performed on persons with suspected lead poisoning).

(253) Access to ORS and OAR. Those wishing access to any of the Oregon Revised Statutes (ORS) or Oregon Administrative Rules (OAR) referenced here, may contact the Oregon OSHA Resource Center in Salem or the nearest Oregon OSHA Field Office.

(264) Closure and alternative housing:

(a) The operator of agricultural labor housing must provide replacement lodging without charge to the occupants if a government agency with the authority to enforce building, health or safety standards declares the housing or facilities to be uninhabitable and orders them vacated.

(b) The operator must provide replacement lodging for 7 consecutive days from the time the housing was closed or until the closing agency allows the original housing to reopen, whichever is shorter.

(c) Replacement lodging must meet or exceed the health and safety standards of Oregon OSHA. Oregon OSHA must approve the location of the replacement housing before employees are sent to it.

(d) Operators must arrange for replacement lodging not later than the end of the day the original housing closes or another date designated by the closing agency.

(e) Post the address of the replacement housing:

(A) Not later than the end of the day the original housing closes.

(B) In a place convenient to affected workers.

(C) In all languages spoken by the occupants.

(f) The posting in (e) above must state that the replacement housing is free to occupants of the closed housing.

(g) The operator must give Oregon OSHA a list of names of the occupants and the location of the replacement housing, for each.

(h) When the cause of the closure is beyond the control of the agricultural labor housing operator, sections (a), (b), (c), (d), (e) and (g) above do not apply. To determine whether the cause of closure was beyond the control of the operator, Oregon OSHA will consider these circumstances, including but not limited to:

(A) Whether the cause of the closure is a natural disaster;

(B) Whether the circumstances leading to the closure were known or should have been known to the operator;

(C) Whether operator diligence could have avoided the circumstances leading to the closure.

(i) Agricultural labor housing occupants entitled to temporary replacement housing under this rule must accept or reject that housing when the original housing closes. These rules do not obligate operators to reimburse displaced occupants for housing they obtain without the operator's knowledge or consent. (A) The operator is responsible for replacement lodging only for as many people as occupied the original closed housing. When an occupant rejects the replacement housing, the operator has no obligation to reimburse that occupant for other replacement housing.

(j) Oregon OSHA may issue a citation and assess a monetary penalty for violation of these rules as in ORS 654.071 and 654.086.

~~{ED. NOTE: Tables referenced are available from the agency.}~~

~~{Publications: Publications referenced are~~

(25) Heat Illness Prevention in Labor Housing.

(a) Cooling Areas. If rooms where people sleep are not able to maintain an indoor temperature of 78 degrees Fahrenheit or less (using air conditioners, evaporative coolers, air purifiers with coolers, or other reliable means), employers must provide an area(s) for occupants to cool off whenever the heat index outside the housing units is at or above 80 degrees Fahrenheit. The cooling area(s) must be large enough to allow use by at least 50 percent of the occupants at the labor housing at any one time and must use either or any combination of the following two approaches:

(A) Giving occupants continual access to one or more common rooms that are maintained at or a below a temperature of 78 degrees Fahrenheit (using air conditioners, evaporative coolers, air purifiers with coolers, or other reliable means). This can be done by making use of existing common rooms, otherwise unused housing units, or other available indoor spaces that do not present additional risks to the occupants.

(B) Giving occupants continual access to outdoor rest areas (located away from work areas or activities that could create a hazard). The rest areas must:

(i) Be shaded by any natural or artificial means, so that occupants can sit or stand in a normal posture fully in the shade;

(ii) Provide water misters, cooling vests, cooling towels, or equally effective means of relief. If relying upon items that can only be used by one individual at a time, enough must be provided to satisfy the 50 percent requirement and they must not be shared without being washed; and

(iii) Locate available chairs, benches, and other seating in a manner that encourages use.

Note: Although employers are permitted to use either or any combination of the approaches listed in (A) and (B), they are encouraged to provide at least some of the required space using the methods listed in (A).

(b) Minimizing Heat in Housing Units. If rooms where people sleep are not able to maintain an indoor temperature of 78 degrees Fahrenheit or less (using air conditioners, evaporative coolers, air purifiers with coolers, or other reliable means), employers must take the following steps

(A) Optimize the ability to keep housing cool by ensuring that windows can be protected from direct sunlight in a manner that minimizes radiant heat during all hours of the day, whether using natural or artificial shade, the provision of window coverings must deflect the sun and not simply absorb the heat, or other equally effective measures. Such measures must not interfere with the ability to open and close windows or create another hazard; and

(B) Make fans available at no cost for any housing occupants who wish to use them.

(c) Temperature Awareness. To ensure that housing occupants can remain aware of the effects of heat on the indoor environment, both immediately and on an ongoing basis, employers must provide a thermometer that displays the temperature in both Fahrenheit and Celsius in each individual housing unit. Employers are encouraged, but not required, to provide a device that also measures humidity.

(d) Employee and Occupant Information. In addition to ensuring that employees have received the training required by OAR 437-004-1131(5), the employer must display the "Heat Risks in Housing" poster provided by Oregon OSHA in one or more prominent locations that housing occupants would normally see and must add the necessary emergency contact information to the poster, allowing housing occupants to contact emergency services as necessary.

(e) Access to Emergency Services. Employers must ensure that occupants always have access to a working telephone that can be used to contact emergency services. An electronic device, such as a cell phone, may be used for this purpose only if reception in the area is reliable.

Statutory/Other Authority: ORS 654.025(2), 654.035 & 656.726(34)

Statutes Implemented: ORS 654.001 through 654.295, ORS 658.750, 658.755, 658.780, 658.785, 658.790, 658.805

History: OSHA 4-1998, adopt filed 08/28/1998, effective 10/01/1998

OSHA 5-2000, adopt filed 05/18/2000, effective 06/01/2000

OSHA 4-2008, adopt filed 03/24/2008, effective 05/01/2008

OSHA 1-2009, adopt filed 01/26/2009, effective 01/26/2009
OSHA 8-2021, temporary filed 08/02/2021, effective 08/09/2021 through
02/04/2022
OSHA X-20XX, adopt filed XX/XX/XXXX, effective XX/XX/XXXX