

Heat Illness Prevention Plan

Roseburg School District

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1. Goal

The goal of the Heat Illness Prevention Plan is to protect employees of Roseburg Public Schools in indoor and outdoor environments as well as meet Oregon OSHA requirements. A copy of this plan shall be made available to all of our employees. You may find a copy of the plan on the human resource page of the district website or you may request a copy of this plan by contacting the human resource director or your supervisor. This plan will be reviewed annually and updated as necessary.

The procedures will describe OSHA's essential heat illness prevention steps to most work settings. The District realizes during a heat-wave or other severe environmental conditions heat illness is a factor and extra precautions must be taken to protect our employees.

2. Scope

This plan implements efficient and safe work practices that will prevent both indoor and outdoor heat-related illnesses among employees at our workplace. It will be used for training new employees and for the annual refresher training of employees. All employees potentially exposed to hot working environments are subject to his plan.

Things to consider to tailor this plan to our specific worksite(s) are:

- The size of the crew and length of the work shift
- The anticipated/predicted heat index for the day/week
- The use of personal protective equipment that may increase the body's heat burden.
- Location of work being performed
- Physical exertion needed to perform the task at hand

Our work activities that could potentially expose our employees to these hazards include:

1. Mowing
2. Landscape Maintenance
3. Irrigation Repair
4. Tree and Shrub Trimming
5. Construction Framing
6. Roof Work
7. Filter Changes
8. Window Washing
9. Floor Finishing
10. Custodial Tasks
11. Furniture Moving

3. Background

Heat-related illnesses can happen if workplace activities in a hot environment overwhelm the body's ability to cool itself. This becomes more likely if any of the risk factors are present. Examples include working in a hot environment without adequate access to water for rehydration, working in protective gear that does not allow air circulation across the skin, or working where the humidity is too high for sweat to evaporate.

4. Risk Factors

The following are **environmental risk factors** for heat illness:

- Air temperature above 90 degrees.
- Relative humidity above 40%.
- Radiant heat from the sun and other sources.
- Lack of air movement.
- The physical effort of the employee at work.
- The use of non-breathable clothing and other personal protective equipment.

The following are **personal risk factors** for heat illness:

- No acclimation to warmer temperatures.
- Poor general health.
- Alcohol consumption.
- Caffeine consumption.
- Previous heat related illness.
- Dehydration.
- Prescription medication that inhibits the effect for the body to retain water. Examples are beta blockers, diuretics, antihistamines, tranquilizers and antipsychotics.

Employees are responsible for knowing and understanding their personal risk factors that could increase their chances of suffering a heat related illness.

5. NIOSH Heat Index App

Supervisors, site administrators and employees who are mainly outside or or inside exposed to the heat are encouraged to download the National Institute for Occupational Safety and Health (NIOSH) *Heat Index App*, available for iPhone and Android devices. This app provides recommendations to prevent heat-related illnesses and reduce heat stress in outdoor workers based on local weather conditions used to calculate the heat index. Federal OSHA has provided training on how to use the app. It

is required that all supervisory and management employees watch the video and all other employees that download the Heat Index app should watch a short video located on the Oregon OSHA website: <https://osha.oregon.gov/media/videos-online/Pages/heat-safety-app-tutorial.aspx>.

6. Heat-Related Illnesses

Heat Rash

Heat rash is the most common health problem in hot work environments. It is caused by sweating and looks like a red cluster of pimples or small blisters. Heat rash usually appears on parts of the body that overlap or rub other parts of the body, such as in the groin area, under the arms or breasts, and in knee or elbow creases. If an employee has symptoms of heat rash, provide a cooler, less humid work environment, if possible. Advise the employee to keep the area dry and not to use ointments and creams that make the skin warm or moist, which can make the rash worse.

Heat Exhaustion

Heat exhaustion can best be prevented by being aware of one's physical limits in a hazardous environment on hot, humid days. The most important factor is to drink enough clear fluids (especially water, not alcohol or caffeine) to replace those lost to perspiration. Signs and symptoms of heat exhaustion typically include:

- Profuse sweating
- Weakness and fatigue
- Nausea and vomiting
- Muscle cramps (associated with dehydration)
- Headache
- Light-headedness or fainting; fainting or loss of consciousness is potentially serious and should be treated as a medical emergency.

When you recognize heat exhaustion symptoms in an employee, you must intervene; stop the activity, and move the employee to a cooler environment. Cooling off and rehydrating with water (or electrolyte-replacing sports drinks) is the cornerstone of treatment for heat exhaustion. If the employee resumes work before their core temperature returns to normal levels, symptoms may quickly return.

If there is no intervention and the body's temperature regulation fails, heat exhaustion can rapidly progress to heat stroke, a life-threatening condition!

Heat Stroke

Heat stroke requires an immediate emergency medical response. The person may stop sweating, become confused or lethargic, and may even have a seizure. The internal

body temperature may exceed 106 degrees F. Signs and symptoms of heat stroke typically include:

- Absence of sweating
- Dry skin
- Agitation or strange behavior
- Dizziness, disorientation, or lethargy
- Seizures or signs that mimic those of a heart attack

Ensure that emergency responders are summoned immediately if heat stroke is suspected. While waiting for emergency responders to arrive, cool the employee; move the employee to an air-conditioned environment or a cool, shady area; and help the employee remove any unnecessary clothing. Do not leave the employee unattended. Heat stroke requires immediate medical attention to prevent permanent damage to the brain and other vital organs that can result in death.

Heat Cramps

Heat cramps usually affect workers who sweat a lot during strenuous activity. This sweating depletes the body's salt and moisture levels. Low salt levels in muscles cause painful cramps. Heat cramps may also be a symptom of heat exhaustion.

Rhabdomyolysis

Rhabdomyolysis (rhabdo) is a medical condition associated with heat stress and prolonged physical exertion. Rhabdo causes the rapid breakdown, rupture, and death of muscle. When muscle tissue dies, electrolytes and large proteins are released into the bloodstream. This can cause irregular heart rhythms, seizures, and damage to the kidneys.

Symptoms of rhabdo include:

- Muscle cramps/pain
- Abnormally dark (tea or cola-colored) urine
- Weakness
- Exercise intolerance
- Asymptomatic

Heat Syncope

Heat syncope is a fainting (syncope) episode or dizziness that usually occurs when standing for too long or suddenly standing up after sitting or lying. Factors that may contribute to heat syncope include dehydration and lack of acclimatization.

Symptoms of heat syncope include:

- Fainting (short duration)
- Dizziness
- Light-headedness from standing too long or suddenly rising from a sitting or lying position

For more information about this heat-related illnesses, visit

<https://www.cdc.gov/niosh/topics/heatstress/heatrelillness.html#syncope>

The chart below provides information to our employees about the risk to themselves, at certain temperatures, of suffering a heat-related illness.

Note: heat-related illnesses can occur at a heat index of less than 91 degrees Fahrenheit.

Heat index	Risk level	Protective measure
Less than 91°F (33°C)	Lower (caution)	Basic health and safety planning
91°F to 103°F (33°C to 39°C)	Moderate	Implement precautions and heighten awareness
103°F to 115°F (39°C to 46°C)	High	Additional precautions to protect workers
Greater than 115°F (46°C)	Very high to extreme	Even more aggressive protective measures

7. Preventing Heat-related Illnesses

There are several ways to control the daily length of time and temperature to which a worker is exposed in heat stress conditions [OSHA-NIOSH 2011]. These are some best practices at preventing heat-related illnesses:

- Gradually increase workloads and allow more frequent breaks during the first week of work so that employees become acclimatized to higher temperatures, especially those who are new to working in the heat or have been away from that work for a week or more.
- Encourage employees to frequently drink small amounts of water before they become thirsty to stay hydrated. During moderate activity, in moderately hot conditions, employees should drink about 8 ounces of liquid every 15 to 20 minutes. Employees can monitor their hydration with a urine chart. Urine should be clear or slightly colored; dark urine is a warning sign! See urine color chart.

- Encourage employees to eat regular meals and snacks as they provide enough salt and electrolytes to replace those lost through sweating as long as enough water is consumed.
- Provide a buddy system where employees encourage each other to drink water, use shade to stay cool, and to watch each other for symptoms of heat-related illness.
- Educate employees that drinking extreme amounts of water can also be harmful (more than 12 quarts in a 24-hour period).
- Schedule frequent rest periods with water breaks in shaded or air-conditioned recovery areas. Note that air conditioning does not result in loss of heat tolerance.
- Ensure employees are aware of the signs of heat-related illnesses and encourage them to report immediately they or their co-workers show symptoms.
- Monitor weather reports daily and reschedule jobs with high heat exposure to cooler times of the day, if possible. Be extra vigilant when air temperatures rise quickly. When possible, schedule routine maintenance and repair projects for the cooler parts of the year.
- Provide shade or cool areas for breaks
- Containers that hold ice or otherwise keep drinking water and other beverages cold.
- Chilled beverages such as electrolyte type sports drinks. Discourage caffeine consumption.
- Cold treats at break time such as popsicles, ice cream, or fruit with high water content (watermelon, grapes, oranges).
- Cooling tents with mist, fan, and cold water to consume.
- Heat-reflective work clothing such as light-colored, breathable uniforms.
- Evaporative accessories (cooling neck wraps, head bands)
- Cooling vests designed to safely use ice packs.
- Ventilated PPE (high-visibility garments or powered air purifying respirators, if appropriate)
- Cell phone text orders from supervisor to stop and rest in shade and drink.

For our employees that work in buildings or structures that do not have a mechanical cooling system *use the NIOSH Heat Index app to determine the heat index outdoors and assume that it is the same indoors*, and inform you/our employees of the heat index and the risk of our employees experiencing a heat-related illnesses based upon the chart in section 6.

8. Water

The district will remind and encourage employees to drink 32 ounces of water when the heat index is equal or greater than 80 degrees Fahrenheit. Employees working outdoors in these conditions will have cool water available to them. Below is our plan for furnishing drinking water.

Water is located throughout the work area(s). Locations include:

Grounds Crew vehicles and break rooms, drinking fountains and water bottle filling stations.

We have made arrangements to replenish water throughout the day, as necessary.

These arrangements include:

Reminding the employees to replenish the water supply each morning before leaving the Facilities building.

Supervisors checking with crew lead during lunch break to insure enough water is available to finish the day.

Insuring break rooms have ample amounts of water at the start of each work week.

For our mobile crews, we will replenish water by the following methods:

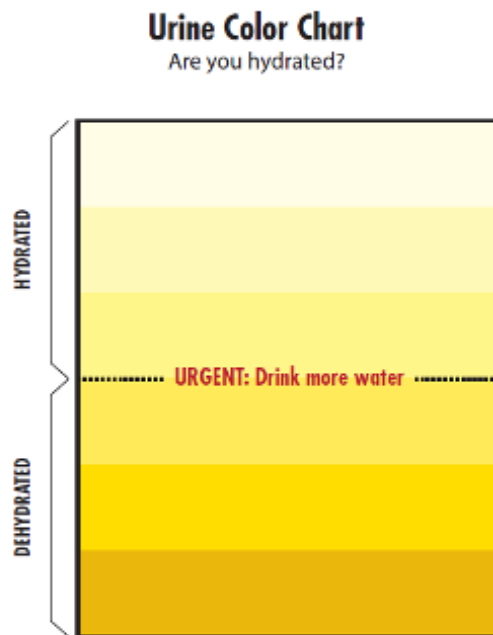
Same as above.

For those working alone, we have made the following arrangements to (for you) replenish your water supply.

Same as above

Supervisor will check in periodically to see that ample water is available.

Refer to the Urine Color Chart to help determine that you are adequately hydrated.



Although the urine chart is a good indicator of hydration status for most workers with normal pale yellow to deep amber urine, urine color can also be affected by diet, medications, and illnesses or disorders.

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.

<https://www.cdc.gov/niosh/docs/2016-106/pdfs/2016-106.pdf>

9. Shade

We will furnish shade when the heat index is equal to or exceeds 80 degrees Fahrenheit and the amount of shade must be enough to accommodate the number of our employees that are on a heat illness prevention rest break; the shade areas will be immediately and readily available at (all of) our worksites. Your rest/lunch break does not begin until you are in the shade.

Option 1 - We have set up shade at these locations:

Office area or break room or other designated room that provides air conditioning.

Option 2 – For our mobile work crews, we have taken the steps below to provide you with shade.

Office area or break room that provide air conditioning.

Air conditioned work vehicles.

For those working alone, we have made the following arrangements to (for you) to have shade on your rest breaks.

Office area or break room that provide air conditioning.

Air conditioned work vehicles.

10. Mandatory Training Requirements

Under Oregon OSHA's Heat Illness Prevention rules, these are the topics that our employees are required to be trained prior to working in hot environments:

- The environmental and personal risk factors (see above for examples).

- Our procedures for complying with the requirements of this standard, including, but not limited to, our 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;
- 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;
- The concept, importance, and methods of the acclimatization plan pursuant to the employer's procedures;
- 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 (see above);
- 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
- The effects of non-occupational factors (drugs, alcohol, obesity, etc.) on tolerance to occupational heat stress.

All employees will view the Oregon OSHA heat training online module and verify its completion through SafeSchools (Vector Solutions).

11. Acclimatization

Acclimatization is the beneficial physiological adaptations that occur during repeated exposure to a hot environment. These physiological adaptations include:

- Increased sweating efficiency (earlier onset of sweating, greater sweat production, and reduced electrolyte loss in sweat).
- Stabilization of the circulation.
- The ability to perform work with lower core temperature and heart rate.
- Increased skin blood flow at a given core temperature.

Employers must implement an acclimatization plan and practice for when the ambient heat index is greater than 90°F. Employees should be closely monitored by a supervisor during this period.

The CDC recommends, but Oregon OSHA recognizes that this approach may not work for all business:

- *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.*

In addition, the level of acclimatization each worker reaches is relative to the initial level of physical fitness and the total heat stress experienced by the individual.

Maintaining acclimatization

Workers can maintain their acclimatization even if they are away from the job for a few days, such as when they go home for the weekend. However, if they are absent for a week or more then there may be a significant loss in the beneficial adaptations leading to an increased likelihood of heat-related illness and a need to gradually reacclimate to the hot environment.

The CDC offers some additional information on maintaining acclimatization:

- It can often be regained in 2 to 3 days upon returning to a hot job.
- It appears to be better maintained by those who are physically fit.
- Seasonal shifts in temperatures may result in difficulties.
- Working in hot, humid environments provides adaptive benefits which also apply in hot, desert environments, and vice versa.
- Air conditioning will not affect acclimatization.

Oregon OSHA has provided us two options when it comes to developing and implementing acclimatization plans. We may either develop our own or follow the CDC's guidelines (above) and these plans must be in writing. We have chosen to develop our own acclimation plan and you may find a copy of our acclimatization plan under "Implementation".

Implementation

This is how we are going to acclimate our employees to high heat conditions to reduce their risk from experiencing a heat-related illness:

- ***For new workers who begin work when the heat index is 90 degrees or more, 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.***
- ***Workers who have had previous experience with the job will be more closely monitored for signs of heat illness throughout their first week. The acclimatization regimen should be no more than a 60% exposure on day 1, 80% on day 2, 100% on day 3.***

12. Heat Illness Prevention Rest Breaks

New adopted rules, effective June 15, 2022, require heat relief for workers, including three specific options for heat illness prevention rest break schedules. This applies whenever an employee performs work activities, whether in indoor or outdoor environments, where the heat index (apparent temperature) equals or exceeds 90 degrees Fahrenheit.

The purpose of work breaks in heat illness prevention is to allow the body to cool down and recover when the heat index is above 90 degrees Fahrenheit. Oregon OSHA has provided employers with three options² for developing a rest break schedule. We will use Option B³, and our rest break schedule is outlined in table 2.

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.

- Light: Sitting or standing with minimal arm and leg work.
- Moderate: Continuous modest intensity, such as light pushing/pulling or normal walking.
- Heavy: Intense upper body work such as carrying loads or sawing.
- Very heavy: Intense activity at an almost maximum pace.

Table 1 Metabolic Heat and Workload (Physical Activity Level)

Level of Workload	Examples	Metabolic Rate in Watts
Rest	Sitting Thinking	115
Light	Sitting with light hand work Writing/Drawing Driving a Car Occasional slow walking Stooping, crouching, kneeling, standing watch etc.	180

<p>Moderate</p>	<p>Pushing/pulling light carts Hammering nails Picking fruit/vegetables Continuous normal walking Operating mobile equipment Raking Mopping or vacuuming Scraping/painting or plastering Laundry, dry cleaning tapping/drilling Marching Molding Packaging Laboratory Work Cooking General Carpentry Using hand tools Light pushing/pulling or normal walking</p>	<p>300</p>
<p>Heavy</p>	<p>Intense arm/trunk work Carrying loads Sawing or heavy carpentry Roofing Pushing/pulling heavy carts or wheelbarrows Fast walking (>4 mph) Landscaping Casting Manual raising & lowering loads Staking Lumber Truck & automobile repair Waxing & buffing by hand Welding Heavy item assembly Grinding & cutting Drill rock or concrete Mixing cement Felling trees</p>	<p>415</p>
<p>Very Heavy</p>	<p>Any activity done at near maximum effort/pace Using an axe Intense shoveling or digging Sledgehammer use Stacking concrete Brick or stone masonry</p>	<p>520</p>

***Workers who are overweight or obese might produce more metabolic heat than other workers who perform the same tasks.**

Implementation

This table outlines our employee's heat illness prevention plan rest breaks:

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 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].

CDC: Occupational Exposure to Heat and Hot Environments: Table 6-2 [2016]³

Each supervisor will monitor the employees in their department to determine start time, how the heat index applies to the employees. It may be beneficial to bring employees back to the Facilities Office before their shift is over, coinciding with the last 40 minutes being the end of their work day.

²Rest Break Schedule options for Heat Illness Prevention

<https://osha.oregon.gov/OSHAPubs/factsheets/fs90.pdf>

³CDC: Occupational Exposure to Heat and Hot Environments

<https://www.cdc.gov/niosh/docs/2016-106/pdfs/2016-106.pdf?id=10.26616/NIOSH PUB2016106>

13. Emergency Heat Plan

When the heat index exceeds 90°F, effective and regular communication must be maintained at the work site so that employees can contact a supervisor or emergency services when necessary. A cellphone or other electronic device may be used for this purpose only if reception in the area is reliable.

We have updated and/or developed an emergency medical plan that address employees' exposure to excessive heat. Below is what we are required to have in our plan.

- (a) An emergency medical plan to ensure the rapid provision of medical services to employees with major illnesses and injuries shall be developed. In such cases, the employer shall determine that the service will be available in an emergency.
- (b) If a physician or an ambulance with Emergency Medical Technicians is readily accessible to the place of employment, then the minimum emergency medical plan must contain the emergency telephone number of the ambulance service. The emergency telephone number shall be posted conspicuously at the place of employment.
- © Employers in areas with a designated 911 telephone number may utilize the 911 service in lieu of posting the specific ambulance telephone number.
- (d) If the place of employment is not in proximity to emergency medical services, then the employer shall have, in addition to the information required in 437-002-0161(4)(a), a definite plan of action to be followed in the event of serious injury to an employee. The plan of action shall consist of the arrangements for:
 - (A) Communication. Two-way radio, telephone, or provision for emergency communication to contact the emergency medical services.
 - (B) Transportation. Availability of transportation to a point where an ambulance can be met or to the nearest suitable medical facility. Vehicles provided for this purpose shall be available at all times, shall have right-of-way over all vehicles or equipment under the control of the employer, and shall be equipped so that due consideration can be given to the proper care and comfort of the injured employee.
 - © Qualified medical personnel at destination.
 - (D) All employees shall be knowledgeable concerning the qualified first aid person(s), the first aid requirements, and emergency medical plan.

A copy of our Emergency Medical Plan is not needed, as all of our locations are within proximity of emergency medical services.

14. Use of Alternative Cooling Methods

Note: this section is only intended for those employers who opt to provide alternative cooling methods. It is required by the rules that the use, care, and maintenance of the alternative cooling methods, be included in these plans.

15. Responsibilities

All employees are responsible for protecting themselves from heat illnesses by following these guidelines for prevention and immediately reporting any signs or symptoms to his or her supervisor.

Michelle Knee is responsible for conducting initial training with new employees, for the annual refresher training, and for administering the provisions of this plan.

Resources

- [Occupational Exposure to Heat and Hot Environments
https://www.cdc.gov/niosh/docs/2016-106/pdfs/2016-106.pdf?id=10.26616/NIOSH PUB2016106](https://www.cdc.gov/niosh/docs/2016-106/pdfs/2016-106.pdf?id=10.26616/NIOSH PUB2016106)
- [Rest Break Schedule Options for Heat Illness Prevention](#)
- [OSHA-NIOSH Heat Safety Phone App](#)
- [OSAA Heat Index Calculator](#)
- [Oregon OSHA Heat Resources](#)
- [Heat Illness Poster](#)
- [OSHA-NIOSH Info sheet](#)