

# Heat Illness Prevention Program

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## 1.0 Purpose

The Oregon Occupational Safety and Health Administration (OSHA) has issued new, permanent rules regarding working during times of excessive heat. These rules are intended to ensure employee safety during hot weather, specifically in situations in which the heat index reaches 80 degrees Fahrenheit or higher.

Heat illness is a serious medical condition resulting from the body's inability to cope with a particular heat load and can progress quickly from mild symptoms to a serious and life-threatening illness. A heat-induced illness can occur when the body undergoes stress from overheating. Heat-related illnesses include heat rash, heat cramps, heat syncope (fainting), heat exhaustion, or heat stroke. Symptoms can range from profuse sweating to dizziness, cessation of sweating, and collapse.

The PSU Heat Illness Prevention Program outlines the procedures required to meet the Oregon OSHA Heat Illness Prevention rule and to maintain a safe and healthy work environment by increasing awareness of heat stress environments, potential health effects, safe work practices, and emergency procedures.

## 2.0 Scope

The Oregon OSHA Heat Illness Prevention Standard (OAR 437-002-0156) applies whenever an employee performs work activities, whether in indoor or outdoor environments where the heat index equals or exceeds 80°F. While exemptions and partial exemptions are written into the Oregon OSHA rule (see below), PSU provides heat illness prevention training materials to all employees annually through electronic dissemination.

Additional requirements under this written program apply to the following departments with employees who are most likely to be exposed to the risk of heat illness:

- Facilities and Property Management
- Materials Management
- University Housing and Residence Life; Summer Conference staff
- Campus Events and Student Union
- Student Activities and Leadership Programs
- Athletics
- University Place Hotel
- Transportation and Parking
- Capital Projects and Construction
- Environmental Health and Safety
- Campus Public Safety
- Campus Recreation / Outdoor Program
- Admissions
- Office of Information Technology
- Some on-campus research operations
- Some off-campus research operations

The procedures included in this program describe the minimum prevention measures related to heat illness for PSU employees when working within the state of Oregon. Depending on the presence of certain risk factors, greater caution and protective measures beyond what is listed here may be needed to protect employees. For all other locations, supervisors are responsible for developing work-site specific plans to be reviewed with employees prior to commencing work onsite.

#### Exemptions:

- It does not apply to incidental heat exposure where an employee is not required to perform work activities for more than fifteen minutes in any sixty-minute period.
- It does not apply to 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.
- It does not apply to buildings and structures that have a mechanical ventilation system that keeps the heat index below 80°F.

#### Partial Exemptions:

- Employees performing either “rest” or “light” workloads are exempt from the requirements of this program only when the heat index is less than 90°F.
- Employees who work from home are subject only to the training requirements in Section 6.0 of this written program.

### **3.0 Definitions**

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

**Drinking water** - Potable water that is suitable to drink and that is cool (66°F - 77°F) or cold (35°F - 65°F).

**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, rhabdomyolysis and heat stroke.

**Heat Index** - The heat index, also known as the apparent temperature, is what the temperature feels like to the human body when relative humidity is combined with the air temperature. The heat index is calculated using equations published by the National Oceanic and Atmospheric Administration's National Weather Service. It can be readily determined using the [OSHA-NIOSH Heat Safety Tool App](#) or the online calculator available from the [National Weather Service](#).

**Heat Syncope** - A fainting (syncope) episode or dizziness that usually occurs with prolonged standing or sudden rising from a sitting or lying position. Factors that may contribute to heat syncope include dehydration and lack of acclimatization.

**Relative humidity** – The amount of water vapor present in air expressed as a percentage of the amount needed for saturation at the same temperature.

**Rhabdomyolysis** – Rhabdomyolysis (often called rhabdo) is a serious medical condition that can be fatal or result in permanent disability. Rhabdo occurs when damaged muscle tissue releases its proteins and electrolytes into the blood. These substances can damage the heart and kidneys and cause permanent disability or even death. In the workplace, causes of rhabdo include heat exposure, physical exertion or overuse, and direct trauma (e.g., crush injury from a fall).

**Temperature-controlled environment** – An indoor setting where the temperature is maintained with a mechanical cooling system.

## 4.0 Responsibilities

An effective Heat Illness Prevention Program requires an understanding of roles and responsibilities of affected employees. Implementation of the Program provisions is the responsibility of each employee under the direction of individual PSU departments. Environmental Health and Safety (EHS) is responsible for providing technical guidance.

### 4.1 Employees

- Participate in heat illness prevention training.
- Follow precautions and/or department work practices for heat illness prevention, including, but not limited to: taking rest breaks in the shade, staying hydrated, contacting a supervisor when necessary, calling for emergency medical service when needed, and reporting any signs or symptoms of heat illness in themselves, or in other employees.
- Employees are responsible for knowing and educating themselves about their own personal risk factors that may increase their chance for experiencing heat-related illnesses. Refer to [Section 6.3 of this written program for a list of personal risk factors](#). If you are an employee who requires an accommodation based on a personal risk factor, work with your supervisor on rest break and acclimatization schedules or contact the [Leaves and Accommodations Team](#).

### 4.2 Supervisors/Departments

- Develop, implement and maintain a work-site specific Heat Illness Prevention Plan, in coordination with EHS and this written Program, for campus and remote work activities where employees are most likely to be exposed to the risk of heat illness. It must be made available at the work-site to employees. Train employees on the site-specific work practices prior to commencing work. Refer to [Appendix B, Template for Department / Site-Specific Heat Illness Prevention Plan](#).
- Ensure employees receive information and annual training on heat illness prevention prior to being assigned to work activities that can reasonably be anticipated to expose employees to the risk of heat illness. Ensure new employees hired later in the summer receive this training.

- Monitor heat index during times when excess heat is forecasted, and throughout the work shift. Supervisors should utilize the [OSHA-NIOSH heat index tracking tool](#) when measuring the heat index. 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. Supervisors should watch this [short tutorial video from Oregon OSHA](#) on how to use the heat index app. For remote work that may not have access to the Heat Safety Tool app, the National Weather Service provides a [Heat Index Chart](#).
- Share heat index information with employees, and implement additional safety measures when needed. Engineering controls and administrative controls should be used whenever feasible to reduce an employee's exposure to a heat index of less than 90°F. Engineering controls may include fans or air conditioning. Administrative controls may include scheduling work during the cooler part of the day or limiting an employee's exposure.
- Work with employees who identify heat-related personal risk factors on modified rest break and acclimatization schedules. Contact the [Leaves and Accommodations Team](#) if you have any questions about the accommodation being requested. Refer employees to the [Leaves and Accommodations Team](#) if they have questions about accommodation procedures or policies.
- Develop heat acclimatization procedures for new employees or employees returning to work from extended absences of seven or more days. [Refer to Section 5.1.3 of this written program for specific requirements.](#)
- Ensure that an adequate supply of drinking water is readily accessible to employees when temperatures reach or exceed 80°F. Provide frequent opportunities and encouragement to employees to stay hydrated by drinking water. Plumbed drinking water which is fresh, pure, and suitably cool is available to campus employees at various campus hydration stations. For employees who do not have access to plumbed drinking water, a supply of 32 ounces of cool water is required per hour for each employee.
- Ensure adequate shade is provided for employees when temperatures reach or exceed 80°F. Shade must be large enough to comfortably accommodate all employees throughout the work shift or rest periods. Adequate shade on campus is readily available via nearby buildings and tree cover. For extended outdoor work or projects under direct sun such as during field work, supervisors should provide other means of shade such as a tent or canopy (if natural shade is unavailable) to be located as close as practicable to the areas where employees are working. If providing access to shade is not feasible, then alternative cooling measures must be implemented. [Refer to Section 5.1.1 of this written program for further information.](#)
- Implement a heat illness prevention rest break schedule when the heat index is 90°F or greater. [Refer to Section 5.2.3 of this written program for specific requirements.](#)
- Maintain effective communication between employees and supervisors. Implement methods to promptly identify any employee suspected of experiencing heat-related illness. Designate and equip one or more employees on each worksite as authorized to

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call for emergency medical service. [Refer to Section 5.2.1 of this written program for further information and requirements.](#)

- Identify areas where heat-affected employees may cool off and recover when signs and symptoms of heat-related illnesses are recognized. Ensure that employees are observed for alertness and signs and symptoms of heat illness and monitored to determine whether medical attention is necessary. If there are signs or symptoms of severe heat illness, or heat stroke, follow the [PSU Heat Illness Medical Response Plan in Section 5.3 of this program](#) or refer to Appendix A, [PSU Heat Illness Medical Response Plan](#).

### 4.3 Emergency Management

- Develop, implement and periodically update the PSU Extreme Heat Annex of the Emergency Operations Plan.
- Monitor forecast weather conditions and conduct incident assessment if extreme heat is forecast.
- Coordinate PSU's institutional level response activities.

### 4.4 Environmental Health and Safety (EHS)

- Develop, evaluate and periodically update the PSU Heat Illness Prevention Program.
- Develop, evaluate and periodically update the PSU Heat Illness Medical Response Plan.
- Develop Heat Illness Prevention training materials and provide annual training for affected employees through Canvas.
- Maintain the written PSU Heat Illness Prevention Program and make it accessible to all employees.
- Provide information and resources for the campus community for heat illness prevention, including an annual email to all PSU employees that includes information about high heat risk and protective measures.
- Provide consultation to departments to ensure successful program implementation.

## 5.0 Program Requirements

### 5.1 Heat Index 80°F or Above

#### 5.1.1 Access to shade

Shade areas are required when the heat index in the work area equals or exceeds 80 degrees Fahrenheit. Shade may be provided by natural or artificial means that do not expose employees to unsafe or unhealthy conditions and that do not discourage access or use.

Adequate shade on campus is readily available via nearby buildings and tree cover. For extended outdoor work or projects under direct sun such as during field work, alternative means of shade must be provided, such as a tent or canopy (if natural shade is unavailable).

A shade area must meet the following:

- Be either open to the outside air (at least three open sides) or have mechanical ventilation for cooling.
- Be located as close as practical to the areas where employees are working.
- Be large enough to comfortably accommodate all employees on recovery, rest, or meal periods so they have room to sit. Employees must remove any PPE that retains heat, such as chemical resistant suits, during recovery and rest periods.
- If trees or other vegetation are used to provide shade, the thickness and shape of the shaded area must provide sufficient shadow to protect employees.

One indicator that shade is sufficient is when objects do not cast a shadow in the area of blocked sunlight. Shade is not sufficient 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 working air conditioning.

If providing access to shade is not safe or it interferes with the ability of employees to complete the necessary work in a particular situation, for example, during high winds or when an employee is walking through range land, then alternative cooling measures must be implemented that provide equivalent protection such as providing cooling vests (either with fans or ice packs), water-dampened cotton clothing, or similar effective measures. If alternative cooling measures are used, the work-site specific Heat Illness Prevention Plan must include, in writing, the use, care, and maintenance of the alternative cooling methods.

### **5.1.2 Drinking Water**

Drinking water must be readily accessible to employees at all times and at no cost when the heat index in the work area equals or exceeds 80 degrees Fahrenheit. Drinking water that is suitable to drink and cool (66 - 77°F) or cold (35 - 65°F) must be provided.

Plumbed drinking water which is fresh, pure, and suitably cool, is available to campus employees at various campus hydration stations.

For employees who do not have access to plumbed drinking water, a supply of 32 ounces of drinking water is required per hour for each employee. The entire quantity of drinking water does not need to be supplied for employees at the beginning of the shift, if procedures are established to replenish the water consumed during the shift.

Employees must have ample opportunity to drink water required under this section.

Drinking water packaged as a consumer product and electrolyte-replenishing drinks that do not contain caffeine – sports drinks, for example – are acceptable substitutes, but should not completely replace the required water supplies.

### **5.1.3 Acclimatization Plans**

Acclimatization is the 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.

Once acclimated to the heat, some of the beneficial adjustments include:

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

Disadvantages of being unacclimatized include:

- Readily show signs of heat stress when exposed to hot environments.
- Difficulty replacing all of the water lost in sweat.
- Failure to replace the water lost will slow or prevent acclimatization.

Departments must develop effective acclimatization practices that allow employees to gradually adapt to working at sites where the ambient temperature exceeds the heat index of 80°F. PSU departments will follow the acclimatization plan developed by the [Centers for Disease Control and Prevention and NIOSH](#):

- Gradually increase exposure time in hot environmental conditions over a period of 7 to 14 days.
- For new employees, the schedule should be no more than 20% of the usual duration of work in the hot environment on day 1 and no more than 20% increase on each additional day.
- For employees 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.
- The time required for non-physically fit individuals to develop acclimatization is about 50% greater than for the physically fit.



**Acclimatization Plan for Employees New to the Job or at Worksites Where Employees Are at Risk for Heat Illness**

<b>Day of Work</b>	<b>Percent of time working in excessive heat (equal to or above a Heat Index of 80°F), based on an 8-hour work day</b>	<b>Equivalent work hours in excessive heat (equal to or above a Heat Index of 80°F)</b>
1st	20	Employees should work no more than 2 hours in excessive heat. Employees can break this into two, 1-hour periods.
2nd	40	Employees should work no more than 3.2 hours in excessive heat.
3rd	60	Employees should work no more than 5 hours in excessive heat.
4th	80	Employees should work no more than 6.5 hours in excessive heat.
5th	100	Employees may work the entire shift in excessive heat.

**Acclimatization Plan for Employees with Previous Exposure to Heat (have worked the past seven days or returning from an absence of three days or less)**

<b>Day of Work</b>	<b>Percent of time working in excessive heat (equal to or above a Heat Index of 80°F), based on an 8-hour work day</b>	<b>Equivalent work hours in excessive heat (equal to or above a Heat Index of 80°F)</b>
1st	50	Employees should work no more than 4 hours in excessive heat.
2nd	60	Employees should work no more than 5 hours in excessive heat.
3rd	80	Employees should work no more than 6.5 hours in excessive heat.
4th	100	Employees may work the entire shift in excessive heat.

Departments must also consider the following information when developing an acclimatization plan.

Level of acclimatization should take into account:

- The initial level of physical fitness and the total heat stress experienced by the individual.
- The effect of exposure to direct sunlight.
- The effect of clothing type and personal protective equipment.

Factors to consider for maintaining acclimatization:

- Can be maintained for a few days of non-heat exposure.
- 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.
- Can be regained in 2 to 3 days upon return to a hot job.
- 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 that also apply in hot, desert environments, and vice versa.
- Air conditioning will not affect acclimatization.

## **5.2 High Heat Practices (Heat Index 90°F or above)**

Engineering controls and administrative controls should be used whenever feasible to reduce an employee's exposure to a heat index of less than 90°F. Engineering controls may include fans or air conditioning. Administrative controls may include scheduling work during the cooler part of the day or limiting an employee's exposure.

When engineering controls and administrative controls do not reduce an employee's exposure to a heat index of less than 90°F, the following additional high heat practices must be implemented and maintained.

### **5.2.1 Communication**

- Maintain communication by voice, observation, or electronic means so that employees can contact a supervisor when necessary. Communication must occur in a language and vocabulary readily understood by all employees. Cell phones and text messaging may be used for this purpose only if reception in the area is constant and reliable. If reception is not reliable, satellite communication devices are acceptable. Contact [EHS-group@pdx.edu](mailto:EHS-group@pdx.edu) or submit this [Google form](#) to check out satellite communication devices for field work in remote areas.
- Implement one or more of the following to promptly identify any employee suspected of experiencing heat-related illness:

- Regular communication with employees working alone, such as by radio, cell phone, or other alternative means, or
- Create a mandatory buddy system, or
- Implement other equally effective means of observation or communication.
- One or more employees on each worksite must be designated, equipped, and authorized to call for emergency medical services, and allow for other employees to call for emergency services when designated employees are not immediately available.

### 5.2.2 Heat Index Monitoring in Indoor Buildings

When employees work in buildings and structures that do not have a mechanical ventilation system, the indoor heat index must be determined at the same time and location when occupied by employees. PSU will accomplish this as follows:

- For the West Heating Plant, the temperature and humidity will be directly measured to determine the current indoor heat index.
- If the structure is designed or otherwise known to be affected by outdoor humidity, for example, hoop houses and greenhouses, the actual humidity inside the structure must be measured. For the Research Greenhouse, it has its own monitoring system for temperature and humidity.
- For all other locations, the [National Institute for Occupational Safety and Health's \(NIOSH\) Heat Safety Tool app](#) will be used to determine the heat index outside of the building or structure and assume that the heat index is the same inside the building.

### 5.2.3 Rest Break Schedule

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. A worker's weight may impact the production of metabolic heat more than other workers who perform the same tasks. To prevent a hazardous combination of environmental and metabolic heat, supervisors should be aware of workers' activity level. Workload can be classified as rest, light, moderate, heavy, or very heavy.

- Rest: Sitting and thinking.
- Light: Sitting or standing with minimal arm and leg work. Examples: sewing; writing or drawing; driving a car; occasional or slow walking; stooping, crouching, or kneeling; standing watch.
- Moderate: Continuous modest intensity. Examples: pushing and pulling light carts; continuous normal walking; driving or operating mobile equipment; raking; mopping or vacuuming floors; scraping, painting or plastering; laundry; machining; packaging; laboratory work; cooking; general carpentry; using hand tools.
- Heavy: Intense upper body work. Examples: carrying loads; shoveling; sawing or heavy

carpentry; roofing; pushing and pulling heavy carts; fast walking; landscaping; casting; manual raising and lowering loads; welding; heavy item assembly; grinding and cutting; drilling rock or concrete; mixing cement; felling trees.

- Very heavy: Intense activity at an almost maximum pace. Examples: climbing stairs, ladder or ramp; using an axe; intense shoveling or digging; sledgehammer use; stacking concrete, brick or stone masonry.

The following elements must be considered for the rest break schedule and may increase the duration or interval of the rest break beyond the minimum requirements:

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

The following rest break schedule must be implemented, at a minimum:

- When the heat index is 90°F or greater, employees should have a 10-minute rest break every two hours.
- When the heat index is 100°F or greater, employees should have a 15-minute rest break every hour.

The rest breaks 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 heat illness prevention rest break must be calculated using only the time spent in the shade and when employees are not performing work other than “rest” or “light” work. The requirement for heat illness prevention rest breaks does not prohibit “rest” or “light” work-related activities conducted in a temperature-controlled environment, such as paperwork, at the discretion of the employee.

Except when the heat illness prevention rest breaks coincide with the existing unpaid meal break, the heat illness prevention rest break is a work assignment. Heat illness prevention rest breaks are only required during the time of the shift that the heat index equals or exceeds 90°F.

### **5.3 Heat Illness Medical Response Plan**

The emergency medical plan must address employee exposure to excessive heat, including the types of medical situations that employees could encounter related to excessive heat exposure. The [PSU Heat Illness Medical Response Plan](#) is described in this section and is also available from the [EHS Heat Illness Prevention Program webpage](#).

If a supervisor observes signs of heat illness, or an employee reports symptoms of heat illness, the employee must be relieved from duty and provided with sufficient means to reduce body temperature. Examples include, but are not limited to: cooling blankets, cooling vests, and fans. Heat illnesses may include heat cramps, heat syncope (fainting), heat exhaustion, rhabdomyolysis, and in severe instances heat stroke.

An employee exhibiting signs or symptoms of heat illness must be monitored and must not be left alone or sent home without being offered onsite first aid to reduce body temperature and/or being provided with emergency medical services.

If the signs or symptoms are indicators of **severe** heat illness (such as, but not limited to, decreased level of consciousness, staggering, vomiting, disorientation, irrational behavior or convulsions), the following emergency response procedures must be immediately implemented:

- Contact emergency medical services by dialing 9-1-1 or the Campus Public Safety Office at (503) 725-5911, or activate one of the blue light emergency phones on campus.
- Tell the dispatcher this is a heat-related illness, the current condition of the person, and provide clear and precise directions to the location.
- Administer appropriate first aid and wait with the person until emergency responders arrive.
- If not in close proximity to emergency medical services, a two-way radio or equivalent communication method must be provided, knowledge of a location where emergency medical services can be met, and awareness by all employees of those on the field work team that are trained in first aid. If necessary and instructed to do so by medical professionals, transport employees to a place where they can be reached by an emergency medical provider.
- After the emergency, report the incident to your supervisor and to [Human Resources](#) via the Injury Report Form. Injuries must be reported even if there is no medical treatment.

### **5.3.1 Heat Illnesses and Response/First Aid**

Condition	Symptoms	Response/First Aid
<p><b>Heat Stroke</b></p> <p>Heat stroke is a severe medical emergency. Call for emergency medical services or get to a hospital immediately.</p>	<ul style="list-style-type: none"> <li>● Confusion, slurred speech</li> <li>● High body temperature (above 103° F)</li> <li>● Hot, dry skin or profuse sweating</li> <li>● Possible unconsciousness</li> <li>● Seizures</li> </ul>	<ul style="list-style-type: none"> <li>● Call 911 or the Campus Public Safety Office at (503) 725-5911.</li> <li>● Get the person to a cool place to lie down, remove outer clothing, and stay with them.</li> <li>● Cool them quickly with a cold water or ice bath if possible; wet the skin, place cold wet cloths on skin, or soak clothing with cool water. <b>Do not</b> put an unconscious person in a bath or shower.</li> <li>● Place cold wet towels or ice on their head, neck, armpits, and groin.</li> <li>● Circulate the air around the person to speed cooling.</li> </ul>
<p><b>Heat Syncope</b></p>	<ul style="list-style-type: none"> <li>● Dizziness</li> <li>● Fainting (short duration)</li> <li>● Light-headedness from standing too long or suddenly rising from a sitting or lying position</li> </ul>	<ul style="list-style-type: none"> <li>● Have the person sit or lie down in a cool, shady area.</li> <li>● Have them slowly drink water, clear juice, or a sports drink.</li> </ul>

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### Heat Exhaustion

- Heavy sweating
  - Nausea
  - Headache
  - Dizziness, light-headedness
  - Thirst
  - Irritability
  - Weakness
  - Elevated body temperature
  - Decreased urine output
- Take the person to a clinic or emergency room for medical evaluation and treatment.
  - Call 911 if medical care is unavailable.
  - Stay with the person until help arrives.
  - Move the person to a cooler location.
  - Have the person lie down and loosen their clothing; remove shoes/socks.
  - Apply cool, wet cloths to as much of their body as possible.
  - Encourage frequent sips of cool water.

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### Heat Cramps

- Muscle cramps, pains or spasms – often in the abdomen, arms, or legs
- Drink water and have a snack and/or carbohydrate-electrolyte replacement liquid (e.g., sports drinks) every 15 to 20 minutes.
  - Avoid salt tablets.
  - Seek medical care if the person has heart problems, is on a low sodium diet, or if heat cramps last longer than an hour.

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### Rhabdomyolysis

Associated with heat stress and prolonged physical exertion. A breakdown of muscle tissue that releases a damaging protein in the blood.

- Muscle cramps/pain
  - Abnormally dark urine (tea or cola-colored)
  - Weakness
  - Exercise intolerance
  - Asymptomatic
- Stop activity.
  - Drink more liquids (water preferred).
  - Seek immediate care at the nearest medical facility.
  - Ask to be checked for rhabdomyolysis (i.e., blood sample analyzed for creatine kinase).

## 5.4 Exposure to Heat from Work Processes

Exposure to heat that is generated only from the work process is not subject to the Oregon OSHA Heat Illness Prevention Standard (OAR 437-002-0156). In such cases, the requirements of OAR 437-002-0144(2), Temperature Provisions, apply as follows:

- Where processes create harmful or hazardous temperature and humidity conditions, measures shall be taken to control the conditions or to control the effect on the employee.

This section will be expanded, as needed, for application in work areas where high temperatures are generated from the work process, including, but not limited to: boilers, kilns, and proximity to engines or hot equipment.

## 6.0 Information and Training

### 6.1 Training Requirement and Applicability

Training must be provided annually before employees begin work that can reasonably be anticipated to expose employees to the risk of heat illness. This includes new employees, supervisory, and non-supervisory employees. Employees who work remotely are also required to complete the training. The Heat Illness Prevention training must be provided in a language and vocabulary readily understood by employees, and in a manner that facilitates employee feedback. Training will be provided annually to affected employees through Canvas.

Departments with employees most likely to be exposed to the risk of heat illness include the following:

- Facilities and Property Management
- Materials Management
- University Housing and Residence Life; Summer Conference staff
- Campus Events / Student Union
- Student Activities and Leadership Program
- Athletics
- University Place Hotel
- Transportation and Parking
- Capital Projects and Construction
- Environmental Health and Safety
- Campus Public Safety
- Campus Recreation / Outdoor Program
- Admissions
- Office of Information Technology
- Some on-campus research operations
- Some off-campus research operations



In addition to providing the annual training through Canvas, EHS sends an email annually to all PSU employees that includes information about high heat risk and protective measures.

## 6.2 Training Content

Training must include at least the following:

- 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, and personal protective equipment.
- The procedures for complying with the requirements of the Oregon OSHA Heat Illness Prevention Rule, including the employer's responsibility to provide water, provide 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, a minimum of 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. [Refer to Section 5.1.3 for more information.](#)
- The importance of employees immediately reporting symptoms or signs of heat illness in themselves, or in co-workers.
- The effects of nonoccupational factors (medications, alcohol, obesity, etc.) on tolerance to heat stress.
- The different types of heat illness, the common signs and symptoms of heat illness, how to recognize the symptoms of dehydration, 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.

## 6.3 Risk Factors for Heat Illness

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

- Air temperature above 90 degrees F (32.2 degrees C) can affect the body's ability to lose heat through circulating warm blood.
- Relative humidity above 40 percent can cause sweat to evaporate slowly or not at all.
- Radiant heat from the sun and other sources
- Conductive heat sources such as dark-colored work surfaces

- Lack of air movement affects air temperature and humidity. Air movement removes airborne contaminants that may make breathing more difficult.

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

- Physical effort needed for the work activity
- Use of heavy clothing, non-breathable protective clothing and other personal protective equipment can reduce the body's ability to remove heat. Excess heat and moisture can get trapped inside. Some personal protective equipment can increase physical effort, causing an employee to get hot faster. It is important to remove personal protective equipment during preventative rest breaks.

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

- Lack of acclimatization to warmer temperatures
- Poor general health
- Medical or chronic health conditions may increase the body's sensitivity to heat, including heart disease, diabetes, asthma and chronic obstructive pulmonary disease (COPD), obesity, and kidney disease
- Dehydration
- Alcohol consumption
- Caffeine consumption
- Tobacco use
- Previous heat-related illness
- Use of prescription and over-the-counter medications that affect the body's water retention or other physiological responses to heat such as beta blockers, diuretics, antihistamines, tranquilizers, and antipsychotics
- Increased internal body temperature caused by stress, thyroid problems, pregnancy, illness, or infection

Employees are responsible for knowing and educating themselves about their own personal risk factors that may increase their chance for experiencing heat-related illnesses.

## 6.4 Heat Illness Prevention Resources

Heat illness prevention information and resources are also available on the [EHS Heat Illness Prevention webpage](#).

## 7.0 Recordkeeping

### EHS:

- Maintain the PSU Heat Illness Prevention Program and the PSU Heat Illness Medical Response Plan.
- Maintain electronic training records for Heat Illness Prevention, including the name or identification of each employee trained, the date(s) of the training, and the name of the

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person who conducted the training. The most recent annual training record for each affected employee must be maintained.

### **Supervisors/Departments:**

- Maintain department-specific Heat Illness Prevention Plans that include how the requirements of this written program will be implemented.

### **Emergency Management:**

- Maintain the PSU Extreme Heat Annex of the Emergency Operations Plan.

## **8.0 Program Management**

The PSU Heat Illness Prevention Program is maintained by the EHS department, reviewed periodically, and updated as needed.

The PSU Heat Illness Prevention Program is available, upon request, to employees or their designated representatives, by contacting the EHS-group@pdx.edu or visiting the [EHS Heat Illness Prevention webpage](#).

For additional information or assistance, contact EHS at EHS-group@pdx.edu or call (503) 725-3738.

## **9.0 Regulatory Standards**

Oregon OSHA Oregon Administrative Rules (OAR), Chapter 437, Division 2, OAR 437-002-0156, Heat Illness Prevention

Oregon OSHA, Oregon Administrative Rules (OAR), Chapter 437, Division 2, Subdivision J, General Environmental Controls, OAR 437-002-0144(2), Temperature Provisions

Oregon OSHA, Oregon Administrative Rules (OAR), Chapter 437, Division 2, Subdivision K, Medical and First Aid, OAR 437-002-0161

Oregon OSHA, Oregon Administrative Rules (OAR), Chapter 437, Division 3, Subdivision D, Medical Services and First Aid, 1926.50

## **APPENDICES**

**Appendix A:** [PSU Heat Illness Medical Response Plan](#)

**Appendix B:** [Template Department / Site-Specific Heat Illness Prevention Plan](#)