University of Portland

HEAT ILLNESS PREVENTION PROGRAM



ENVRIONMENTAL HEALTH & SAFETY

JULY 2021

University of Portland

HEAT STRESS ILLNESS PREVENTION PROGRAM

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University of Portland

HEAT STRESS ILLNESS PREVENTION PROGRAM

1.0 SCOPE / APPLICABILITY

This program is to ensure that employees of University of Portland are protected from the adverse effects of possible elevated heat levels at work. This program applies to all work areas where heat exposures that could cause heat stress related illnesses.

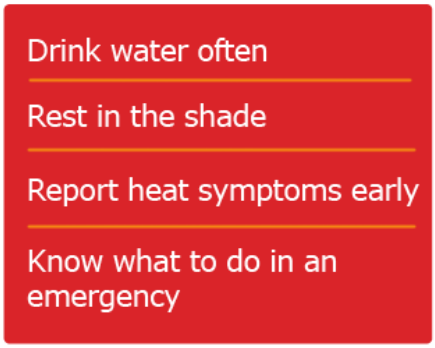
2.0 RESPONSIBILITIES

Exposure to Heat Stress

Exposures to environments that are likely to raise an Employee's "deep core" temperature higher than 100.4 F° increases the risk of heat stress. Operations involving high air temperatures, radiant heat sources, high humidity, direct physical contact with hot objects, or strenuous physical activities have a high potential for inducing heat stress.

Factors Affecting the Possibility of Getting Heat Stress

Age, weight, degree of physical fitness, degree of acclimatization, metabolism, dehydration, use of alcohol or drugs, the clothes a person wears, and a variety of medical conditions such as hypertension – all of these affect a person's sensitivity to heat. Prior heat injury predisposes an individual to additional injury. Individual susceptibility varies.



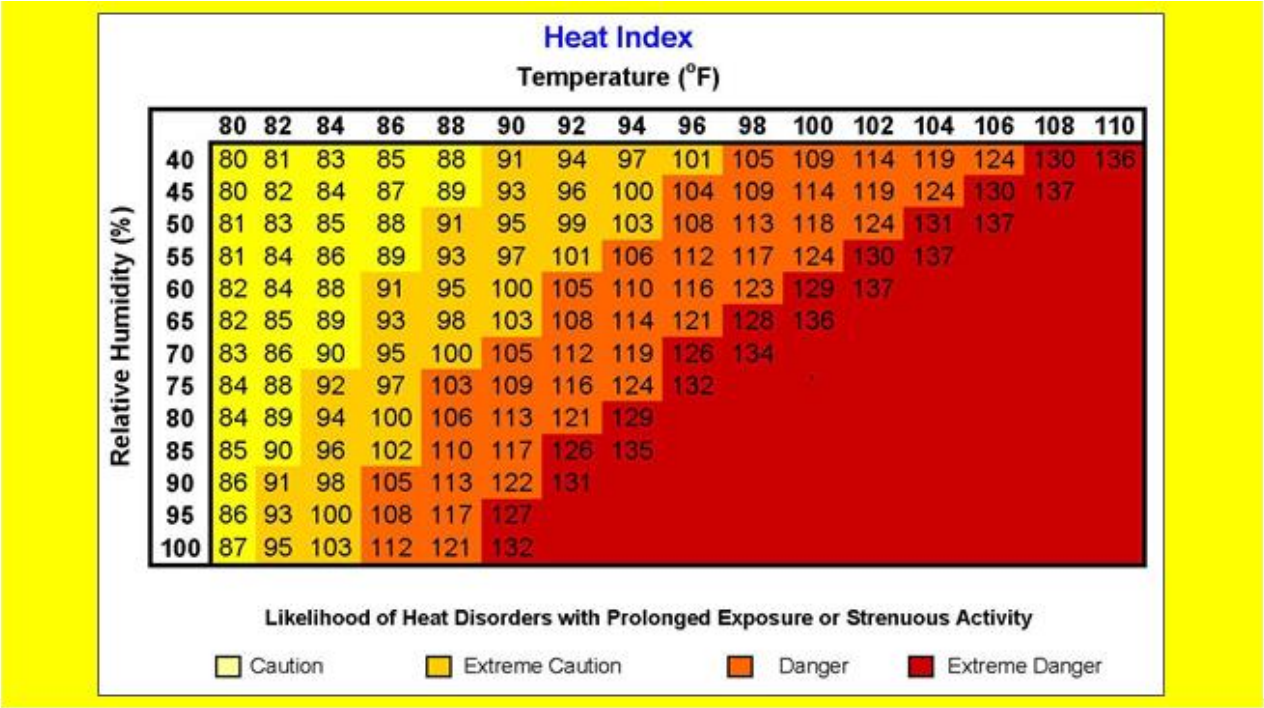
General responsibilities for implementing this program:

1. Management is responsible for the development of this program at University of Portland:
    - Directly provide or arrange for all technical support required
    - Monitor the success of program implementation
2. Supervision is responsible for implementing this program, and for ensuring that adequate support and resources are provided. *Site supervision* will:
    - Ensure that Employees are notified of heat stress conditions when they exist
    - Ensure that Employees who may be exposed to heat stress conditions are first properly trained and prepared.
    - Forward any Employee concerns regarding workplace heat levels to management.
3. Employees required to work in areas with heat stress conditions are responsible for:
    - Wearing required PPE
    - Maintain awareness heat stress related signs and symptoms
    - Be aware of co-Employees who may be showing signs of heat stress illness
    - Reporting to Supervision any problems dealing with heat stress conditions

3.0 TYPES OF HEAT ILLNESS AND TREATMENTS FOR HEAT ILLNESS

Heat Stroke is the most serious heat related disorder. It occurs when a person's body temperature regulation fails, and body temperature rises to critical levels. The elevated metabolic temperatures caused by a combination of work load and environmental heat, both of which contribute to heat stroke, are highly variable and difficult to predict.

Heat stroke is a medical emergency that may result in death.



The primary signs and symptoms of heat stroke are:

- Confusion
- Irrational behavior
- Loss of consciousness
- Convulsions
- Lack of perspiring (usually)
- Hot, dry skin
- Abnormally high body temperature

Responding to a possible heat stroke condition:

First aid treatment in heat stroke situations is important and effective. If a person shows signs of possible heat stroke:

- Call for emergency medical treatment immediately
- Place the person in a shady, cool area
- Outer clothing should be removed.
- Wet the person's skin and hair and then increase the air movement around the person to improve evaporation (which has a cooling effect)

- The person should drink fluids as soon as possible.

Regardless of the person's protests, no Employee suspected of being ill from heat stroke should be sent home or left unattended unless a physician has specifically approved such an order.

Heat Exhaustion is less serious but still requires prompt first aid treatment and medical attention.

Signs and symptoms of heat exhaustion are:

- Headache
- Nausea
- Vertigo (dizziness)
- Weakness
- Thirst
- Out of place giddiness or an attitude of casual carelessness

Fortunately, heat exhaustion responds readily to prompt treatment. Heat exhaustion should not be dismissed lightly. Fainting or heat collapse is often associated with heat exhaustion.

Heat Collapse is a condition in which the brain does not receive enough oxygen because blood pools in the extremities of a person's body trying to keep the body cool. As a result, a person may lose consciousness. This reaction is similar to that of heat exhaustion, but it has not yet affected the body's heat balance. However, the onset of heat collapse is rapid and unpredictable and can be dangerous especially if workers are operating machinery or controlling an operation that should not be left unattended.

Heat Index	Risk Level	Protective Measures
Less than 91°F	**Lower (Caution)**	**Basic heat safety and planning**
91°F to 103°F	**Moderate**	**Implement precautions and heighten awareness**
103°F to 115°F	**High**	**Additional precautions to protect workers**
Greater than 115°F	**Very High to Extreme**	**Triggers even more aggressive protective measures**

Moreover, the victim may be injured when he or she faints. Also, the signs and symptoms seen in heat exhaustion are similar to those of heat stroke, a medical emergency. Workers suffering from heat exhaustion should be removed from the hot environment and given fluid replacement. They should also be encouraged to get adequate rest and when possible ice packs should be applied.

Heat Cramps are usually caused by performing hard physical labor in a hot environment. These cramps have been attributed to an electrolyte imbalance caused by excessive sweating. Cramps appear to be caused by the lack of water replenishment. Because sweat is a hypotonic solution (±0.3% NaCl), excess salt can build up in the body if the water lost through sweating is not replaced. Thirst cannot be relied on as a guide to the need for water; instead, water must be taken every 15 to 20 minutes in hot environments.

Under extreme conditions, such as working for 6 to 8 hours in heavy protective gear, a loss of sodium may occur. Recent studies have shown that drinking commercially available carbohydrate-electrolyte replacement liquids is effective in treating heat cramps.

Heat Rashes are the most common problem in hot work environments where the skin is persistently wetted by unevaporated sweat. Prickly heat is manifested as red papules and usually appears in areas where the clothing is restrictive. As sweating increases, these papules give rise to a prickling sensation. Heat rash papules may become infected if they are not treated. In most cases, heat rashes will disappear when the affected individual returns to a cool environment.

Heat Fatigue is often caused by a lack of acclimatization – a person's body takes time to get used to large changes in environment temperatures. A program of acclimatization and training for work in hot environments is advisable. The signs and symptoms of heat fatigue include impaired performance of skilled manual, mental, or vigilance jobs. There is no treatment for heat fatigue except to remove the heat stress before a more serious heat-related condition develops.

4.0 MONITORING EMPLOYEES FOR HEAT ILLNESS

In hot conditions, employees should monitor themselves for signs of heat stress and monitor other coworkers for signs of heat stress.

In addition, there are three medical methods for monitoring employees for heat illness if there are concerns about an employee's symptoms.

HEART RATE CHECKS



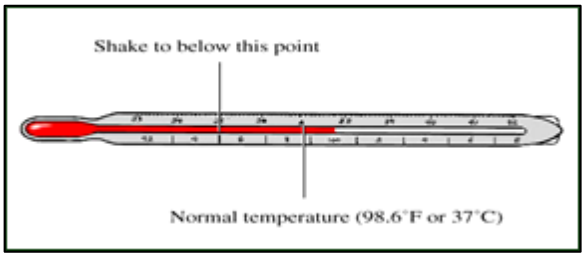
To check a heart rate, count pulse for 30 seconds at the beginning of the rest period. If the heart rate exceeds 110 beats per minute, shorten the next work period by one third and maintain the same rest period.

The recovery heart rate can be checked by comparing the pulse rate taken at 30 seconds (P1) with the pulse rate taken at 2.5 minutes (P3) after the rest break starts. The two pulse rates can be interpreted using the following criteria.

Heart rate recovery pattern	P3	Difference between P1 and P3
Satisfactory recovery	<90	--
High recovery (Conditions may require further study)	90	10
No recovery (May indicate too much stress)	90	<10

ORAL BODY TEMPERATURE CHECK

Check oral temperature with a clinical thermometer after work but before the Employee drinks water. If the oral temperature taken under the tongue exceeds 37.6°C, shorten the next work cycle by 1/3.



MEASURE BODY FLUID LOSS

Measure body water loss by weighing the worker on a scale at the beginning and end of each work day. The worker's weight loss should not exceed 1.5% of total body weight in a work day. If a weight loss exceeding this amount is observed, fluid intake should increase.



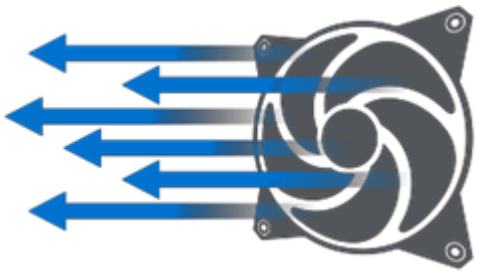
X 1.5% = 3 ILBS. OF LOSS = INCREASE FLUIDS!

5.0 METHODS USED AT UNIVERSITY OF PORTLAND TO PREVENT HEAT ILLNESS

5.1 Engineering controls used to prevent heat illness:

Easy-to-access, open-air and/or ventilated effective shade areas are always available to employees for taking a regular break, a rest prevention break, rest recovery break or meal break. These areas include indoor common spaces such as The Commons, the Library, the Pilot House, and other common areas of air-conditioned buildings on campus.

General ventilation is used to dilute hot air with cooler air. Our ventilation system usually can handle the demands of keeping the workplace from getting too hot. In persistently hot weather, or in areas not as well ventilated as others, portable or local exhaust systems are used.



Air conditioning (cooling) is also used at University of Portland to reduce the temperature of the air by removing the heat (and humidity) from the air. Air conditioning has been installed in areas where cooling makes sense economically and practically.

Air Flow: University of Portland increases the amount and speed of air flow (convection) using fans, etc. in certain work areas. This helps prevent heat illness by increasing both the convective heat exchange (the exchange between the skin surface and the surrounding air) and the rate of evaporation. This does not actually cool the air, so the moving air must impact the worker directly to be effective.

Heat conduction blocking: University of Portland uses heat blocking methods, like shields, to reduce intensive heat coming from hot surfaces within a person's line of sight.

5.2 Administrative and work practices used to prevent heat illness:

Employees are trained and frequently reminded during the work shift about the amount and frequency of fluids they consume on the job.





Fresh, pure, potable, suitably cool water is provided to employees free of charge and is located as close as practicable to where employees are working.

Employees are always allowed and encouraged to take preventative cooldown rests when they feel the need to do so to protect themselves from overheating.

Replace Fluids: University of Portland strongly urges its Employees to be aware of the amount and frequency of fluids they consume on the job. Whenever practical, University of Portland provides cool tap or bottled water for Employees.

Limiting Exposure: In heat stress conditions, University of Portland limits the exposure of a person who is not fully used to high heat-exposure jobs to: 50% exposure on day one, 60% on day two, 80% on day three, and 100% on day four. For new workers completely not used to the higher heat exposure of a job, the exposure is limited to: 20% day one, with a 20% increase in exposure each additional day.

Avoiding Excessive Physical Demands: University of Portland reduces the physical demands on its Employees by reducing physical exertion such as excessive lifting, climbing, or digging with heavy objects. University of Portland spreads work over more individuals, uses relief workers and assigns extra workers when heat avoidance becomes a safety factor.



Rescheduling Work: University of Portland reschedules jobs for the cooler part of the day, and annual maintenance and repair in hot areas are scheduled for the cooler seasons.

Recovery Areas: University of Portland designates air-conditioned common areas for employees to use during rest periods. This includes areas such as The Commons, the Library, the Pilot House, and other air-conditioned break rooms or common areas across campus. Water breaks are encouraged.

Monitoring Employees: Employees who are at risk of heat stress are more closely monitored by coworkers and supervisors. Employees are also taught to be aware of their own body conditions by checking their heart rate, recovery heart rate, oral temperature, or extent of body water loss (see next page for monitoring methods). Employees should look after other employees when the weather is hot.

Conduct heat stress education training: Training is periodically conducted that includes the following:

- Knowledge of the hazards of heat stress
- Predisposing factors, danger signs, and symptoms
- Awareness of first-aid procedures for and the potential health effects of heat stroke
- Employee responsibilities in avoiding heat stress
- Dangers of using drugs, including therapeutic ones, and alcohol in hot work environments
- Use of protective clothing and equipment
- Purpose and coverage of environmental and medical surveillance programs and the advantages of worker participation in such programs

5.3 PPE used by University of Portland to Minimize Heat Illness

Using PPE by Employees is mandated when engineering and administrative controls do not adequately reduce exposure to hazardous sources of heat stress illness. Although the work conditions at University of Portland rarely dictate the need for these kinds of PPE, they include:

- ✓ Reflective and Sheltering Clothing: Including hats, aprons and jackets that reflect heat and displace it away from Employees. Reflective clothing is worn as loosely as possible to encourage the air flow necessary for proper perspiration and evaporation.
- ✓ Wetted Clothing: Sometimes simple measures such as wetting clothing makes a big difference in Employee comfort and heat illness prevention. This technique is also effective when reflective or other impermeable protective clothing is worn and can be quite effective under conditions of high temperature, good air flow, and low humidity.

5.4 Safely Working in Hot Weather

In hot weather (e.g. 85°F and above) such as those potentially found in any work place on asummer's afternoon, the atmosphere can become "heavy" and "rigid". Hot weather has predictable effects:

- ➢ Employees become sleepy and less aware of dangers. There is anincreased risk of accidents due to slips, trips, falls, poor manual handling and injury from hand and power tools.
- ➢ Thermal discomfort gives rise to reduced efficiency which can leadto poor decision making with resulting errors in judgment.
- ➢ Operators of power tools, vehicles and power equipment may loseconcentration and focus.



Heat affects employees in sedentary jobs as well as manual work. It occursas a result of inadequate fluid intake to replace fluids lost by sweating.

- ➢ Fluid imbalance gives rise to nausea, light headedness and generalweakness with an elevated temperature. If untreated it will lead to fainting and possibly heat stroke.

<u>Look after each other when working conditions are hot:</u>

- ☑ Spread the word when about being careful to take extra care of yourself and to keep an eye out forothers being affected by hot weather conditions.
- ☑ Be sure everybody exposed to hot weather is properly trained and prepared including having lots offluids available, being properly dressed and knowing when to take a nice, cool rest break.
- ☑ Decide to use extra patience knowing that heat can affect people's concentration andcommunication. Ask for clarification if something sounds "funny". If others (or yourself!) appear to be getting irritable about annoying things faster than usual – skipthe discussion and cover the topic later.
- ☑ Be aware of people who may be showing signs of heat stress illness
- ☑ Report to supervision any problems dealing with heat stress conditions



Protect yourself when working conditions are hot:



- The human body is 60% water! So, drink plenty of water! Our bodies cool by sweating, losing water thatmust be replaced throughout the day. Although it is commonly recommended that adults drink 8 cups (64 oz.) of water per day, if you're working outside during hot weather, you may easily need twice that amount. Cool water is best.
- Avoid: Carbonated drinks, which can cause cramps; alcohol, which is dehydrating; and salttablets, which can actually make dehydration worse by pulling water out of your cells.
- Dress cool: Wear loose-weave, cotton fabrics that allow your body to breathe while protecting you fromthe sun. Wear a hat or cap in the sun.
- Know your limits: People with disorders of the heart, circulatory system, lungs or skin are moresusceptible to heat stress and should be especially careful. Consult your physician.
- Get used to it: You can increase your tolerance to working in the heat by gradually acclimatizing yourselfto higher temperatures. For this reason, hot days early in the season can be the riskiest.
- Plan your activities: Perform the most strenuous work during the cooler parts of the day.
- Stay cool: Take breaks in a shady area or an air-conditioned room.
- Lead a healthy lifestyle: Get sufficient rest, enough sleep and good nutrition. Regular, moderateexercise will keep you in shape for any working conditions you may encounter.

Employees' roles in preventing heat stress illnesses:

- ★ Learn the hazards of heat stress
- ★ Learn the predisposing factors, danger signs, and symptoms of heat stress
- ★ Learn the best practices for avoiding heat stress
- ★ Learn and practice the first-aid procedures for treating heat illnesses
- ★ Avoid using drugs, including prescriptive drugs, and alcohol in hot work environments
- ★ Use protective clothing and equipment such as heat reflecting clothing or wetted-down clothing

6.0 HEAT ILLNESS PREVENTION IN HIGH AMBIENT TEMPERATURES

OR-OSHA TEMPORARY RULES FOR HIGH AMBIENT TEMPERATURES EFFECTIVE JULY 8TH, 2021

When the heat index temperature in a work area equals or exceeds 80 °F, ("caution level") provisions for access to shade and drinking water for workers are provided.

Additional high-heat practices are initiated and followed by University of Portland once the ambient heat index reaches 90°F ("extreme heat") including implementation of an Emergency medical plan that describes the procedures University of Portland follows should an employee suffer a heat illness incident; and the implementation of effective acclimatization practices.

University of Portland ensures that employees exposed to such conditions have training on heat-related illness, how toprevent it and how to respond to heat illness signs and symptoms.

- At 80 °F and higher: ensure access to shade and drinking water.
- At 90 °F and higher: ensure emergency medical plan is implemented when an employee suffers a heatillness incident; and ensure the implementation of effective acclimatization practices.
- Understanding heat illness prevention training information and how to properly apply it.
- Taking required cool-down breaks
- Drinking plenty of cool water

Requirement – SHADE

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. At University of Portland, shade areas have the following features:

- Are open to the air or provide mechanical ventilation for cooling.
- Provide at least enough shade for the number of employees who are on recovery or taking a rest break ormeal break that they can sit in a normal posture fully in the shade.
- Are located as close as practical to the areas where University of Portland employees are working.

When there is a circumstance when the shade area is unsafe or impractical to provide or use (for example. duringwind storms or when an employee is not working near shade) then University of Portland identifies alternative shade or cooling options for employees that provide equivalent protection.

Requirement – DRINKING WATER

- Provide adequate supply of additional drinking water that is readily accessible to employees at all times and at no cost when the heat index in the work area is 80 °F and higher.
- Supply each employee at least 32 ounces/hour.
- Ensure that employees have ample opportunity to drink water.



(Note: the entire supply of drinking water for all employees for the whole shift is not necessarily supplied right at the beginning of the shift when University of Portland uses effective procedures to replenish water consumed during the shift.)

Requirement – TRAINING

University of Portland ensures that all employees, including new employees, supervisory, and non-supervisory employeesare trained in the following topics (in a language readily understood) before

employees begin work that can reasonably be anticipated to expose employees to a heat index equal to or in excess of 80 °F:

- The environmental and personal risk factors for heat illness including the added burden of heat load on thebody caused by exertion, clothing, and personal protective equipment.
- The obligations of University of Portland to comply with the Temporary Rules including providing water, daily heat index information, shade, cool-down rests, how to report symptoms of heat-related illness, access to first aid, and employees' right to exercise their rights under the Temporary Rules without fear of retaliation.
- The concept, importance, and methods of acclimatization.
- 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 occupational heat stress.
- The different types of heat-related illness, the common signs and symptoms of heat-related illness.

Requirement – HIGH HEAT ACCLIMATIZATION

When University of Portland employees are exposed to a heat index equal to or in excess of 90 °F the followingacclimatization practices are promptly implemented.

COOL DOWN BREAKS:

- Employees take a minimum 10-minute preventative cool-down rest period in the shade at least every two hours, regardless of the overall length of the shift. (The cool-down rest breaks may coincide with the other normal unpaid meal or paid rest periods when practical.)
- Effective communication is maintained with employees (especially employees working alone) by voice, observation, or electronic means is maintained so that employees at our worksites can contact a supervisor when necessary. An electronic device (cell phone or text messaging device) is normally used for this purpose when reception in the area is reliable. Otherwise, radio, a buddy system, observation, or other personal contact method is used.
- Employees are observed for alertness and signs and symptoms of heat illness and monitored to determine whether medical attention is necessary. University of Portland implements one or more of the following practices: One or more employees on each worksite are designated, authorized and equipped to call for emergency medical services should a heat illness incident or other emergency occur. Other employees may also call for emergency services when designated employees are not immediately available.

EMERGENCY MEDICAL PLAN

University of Portland has developed and implements an effective emergency medical plan (see OAR 437-002-0161) when the ambient temperature exceeds the heat index of 90 90 °F.

When 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 supervisor always immediately implements emergency response procedures.

A central requirement of the emergency medical plan requires a supervisor who has observed any signs or symptoms of heat illness in any employee, or when any employee reports signs or symptoms, to take immediate action appropriate to the severity of the illness.

- The employee is immediately relieved from duty and provided with a sufficient means to reduce body temperature (for example: cooling rags, cooling blankets, cooling vests, and fans).
- The employee exhibiting signs or symptoms of heat illness is monitored and is never left alone or sent home without being offered onsite first aid and/or being provided with emergency medical services in accordancewith the emergency procedures.
- Campus Safety and/or Emergency medical services are contacted. If necessary and instructed to do so by the medical professionals, University of Portland transports employees to a place where they can be reached by an emergency medical provider.
- Clear and precise directions to the work site are provided to Campus Safety and/or first responders in order to quickly navigate to the location of the distressed employee

****When in doubt, call Campus Safety for assistance anytime you are concerned about your own symptoms or symptoms of a coworker****