

Section 22

Heat-Related Illness

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Heat- Related Illness

1. Purpose

This section provides information on prevention of heat-related illness. Included is recognition of conditions which may cause concerns as well as symptoms of heat-related illnesses and appropriate first aid responses. This section is intended to bring Western Washington University into compliance with Washington Administrative Code (WAC), Part 296-62-095 through 296-62-09560 Outdoor Heat Exposure. This section also recognizes that the concern of heat-related illness may impact University employees on a broader scale than the limited scope of the WAC. The University seeks to protect its employees from avoidable harm at all times and places of their work duties.

The above WAC is applicable to faculty, staff, and student employees working in outdoor environments from May 1 through September 30 when they are exposed to outdoor heat at, or above, an applicable temperature listed in Table 1. The University also recognizes that conditions listed in Table 1 may occur at other times of the year and may also occur in indoor environments. The precautions and responses outlined in this section are to be used whenever and wherever working conditions may present a concern for heat-related illness.

This section does not apply to incidental exposure which exists when an employee is not required to perform a work activity under conditions listed in Table 1 for more than fifteen minutes in any sixty-minute period. This exception may be applied every hour of the shift.

Table 1

To determine which temperature applies to each worksite select the temperature associated with the general type of clothing or PPE each employee is required to wear.

All other clothing	89° F
Double layer woven clothes including coveralls, jackets, and sweatshirts	77° F
Non-breathing clothes including vapor barrier clothing or PPE such as chemical resistant suits	52° F

2. Definitions

Acclimatization means the body's temporary adaptation to work in heat that occurs as a person is exposed to it over time.

Drinking water means potable water that is suitable to drink. Drinking water packaged as a consumer product and electrolyte-replenishing beverages (i.e. sports drinks) are acceptable.

Engineering controls means the use of devices to reduce exposure and aid cooling (i.e. air conditioners).

Environmental factors for heat-related illness means working conditions that increase susceptibility for heat-related illness such as air temperature, relative humidity, radiant heat from the sun and other sources, conductive heat sources such as the ground, air movement, workload (i.e., heavy, medium, or low) and duration, and personal protective equipment worn by employees. Measurement of environmental factors is not required by WAC 296-62-095.

Heat-related illness means a medical condition resulting from the body's inability to cope with a particular heat load. This includes, but is not limited to, heat cramps, heat rash, heat exhaustion, fainting, and heat stroke.

Outdoor environment means an environment where work activities are conducted outside. Work environments such as inside vehicle cabs, sheds, tents, or other temporary structures may be considered an outdoor environment if the environmental factors affecting temperature are not managed by engineering controls. Construction activity is considered to be work in an indoor environment when performed inside a structure after the outside walls and roof are erected.

Vapor barrier clothing means clothing that significantly inhibits or completely prevents sweat produced by the body from evaporating into the outside air. Such clothing includes encapsulating suits, various forms of chemical resistant suits used for PPE, and other forms of non-breathing clothing.

3. Responsibilities

Department heads are responsible for ensuring that personnel under their purview are trained, provided with water and personal protective equipment, and follow appropriate procedures to minimize heat-related illness.

Supervisory personnel whose activities or whose employees' activities may be impacted by conditions found in Table 1 are responsible for the following actions:

- Identifying and evaluating temperature, humidity and other environmental factors associated with heat-related illness;
- Providing actions including those immediately below to prevent, control, and correct the hazards associated with the occurrence of heat-related illness:
 - Rest breaks that are adjusted for environmental factors, such as air temperature and humidity;
 - Encourage the frequent consumption of drinking water in sufficient quantity to provide one quart per employee per hour.

Employees are responsible for monitoring their own personal factors for heat related illness including consumption of water or other acceptable beverages to ensure hydration.

4. Responding to signs and symptoms of heat-related illness

Employees showing signs or demonstrating symptoms of heat-related illness must be relieved from duty and provided with sufficient means to reduce body temperature. Examples of sufficient means include: shaded rest areas, misting stations, and air conditioned buildings.

Employees showing signs or demonstrating symptoms of heat-related illness must also be monitored to determine whether medical attention is needed.

5. Information on Hot-Weather Health Emergencies

Even short periods of high temperatures can cause serious health problems. Doing too much on a hot day or spending too much time in the sun or staying too long in an overheated place can cause heat-related illnesses. It is important for employees who may work under conditions prone to heat-related emergencies to know the symptoms of heat-related illnesses and overexposure to the sun. They should always contact their supervisors and be ready to provide first aid treatment.

6. Prevention

The danger of exposure to conditions which may cause heat-related illness can be reduced by taking proper precautions. A list of precautions is provided in this section.

7. Training

Training for employees and supervisors must (per WAC 296-62-09560) be provided prior to outdoor work which meets or exceeds a temperature listed in Table 1 and at least annually thereafter. Training should also be provided to employees prior to any indoor work assignment which meets or exceeds a condition listed in Table 1. Departments may contact the Environmental Health and Safety office which provides training and additional information on this topic.

Training for employees must be provided in the following topics:

- Environmental factors that contribute to the risk of heat-related illness;
- Awareness of personal factors that may increase susceptibility to heat-related illness including, but not limited to, an individual's age, degree of acclimatization, medical conditions, drinking water consumption, caffeine use, nicotine use, and use of medications that affect the body's response to heat;
- The importance of removing heat-retaining personal protective equipment such as non-breathable chemical resistant clothing during all breaks;

- The importance of frequent consumption of small quantities of drinking water or other acceptable beverage. One quart or more over the course of an hour may be necessary when the work environment is hot and employees may be sweating more than usual in the performance of their duties;
- The importance of acclimatization;
- The different types of heat-related illness and the common signs and symptoms of heat-related illness; and
- The importance of immediately reporting to the employee's supervisor the symptoms or signs of heat-related illness in themselves or in co-workers and the procedures the employee must follow including appropriate emergency response procedures.

Prior to their assignment, supervisors of persons with heat exposures at or above conditions listed in Table 1 are to be trained in the following:

- The information required to be provided to employees regarding heat-related illness;
- The procedures to follow to implement the heat-related illness prevention program;
- The procedures to follow when an employee exhibits signs or symptoms consistent with possible heat-related illness, including emergency response procedures; and
- The procedures for moving or transporting employees to a place where they can be reached by the emergency medical aid response vehicle.

Heat Stroke

Occurrence

Heat stroke occurs when the body is unable to regulate its temperature.

The body's temperature rises, the sweating mechanism fails, and the body is unable to cool down.

Body temperature may rise to 106 degrees Fahrenheit or higher within 10 to 15 minutes.

Heat stroke can cause death or permanent disability if emergency treatment cannot be provided.

Recognizing Heat Stroke

Warning signs of heat stroke vary but may include the following:

- An extremely high body temperature (above 103 degrees orally).
- Red, hot, and dry skin (no sweating)
- Throbbing headache
- Dizziness
- Nausea
- Confusion
- Unconsciousness

What to Do

If you see any of the above signs, you may be dealing with a life-threatening emergency.

Have someone call for immediate medical assistance while you begin cooling the victim.

Do the following:

- Get the victim to a shady area.
- Cool the victim rapidly using whatever methods you can.

Examples include:

Immerse the victim in a tub of cool water;

Place the person in a cool shower;

Spray the victim with cool water from a garden hose;

Sponge the person with cool water; or

If the humidity is low, wrap the victim in a cool, wet sheet and fan him or her vigorously.

- Monitor body temperature, and continue cooling efforts until the body temperature drops to 100 degrees Fahrenheit.
- If emergency medical personnel are delayed, call the hospital emergency room for further instructions.
- Do not give the victim fluids to drink.
- Get medical assistance as soon as possible.

Sometimes a victim's muscles will begin to twitch uncontrollably as a result of heat stroke.

If this happens, keep the victim from injuring himself, but do not place any object in the mouth and do not give fluids.

If the person is vomiting, make sure the airway remains open by turning the victim on his or her side.

Heat Stress

Occurrence

Heat Stress or Heat Exhaustion is a milder form of heat-related illness than heat stroke.

It can develop after several days of exposure to high temperatures and inadequate or unbalanced replacement of fluids.

It is the body's response to an excessive loss of the water and salt contained in sweat.

Those most prone to heat exhaustion are elderly people, people with high blood pressure, and people working or exercising in a hot environment.

Recognizing Heat Stress

Warning signs of heat stress include the following:

- Heavy sweating
- Paleness
- Muscle cramps
- Tiredness
- Weakness
- Dizziness
- Headache
- Nausea or vomiting
- Fainting

The skin may be cool and moist.

The victim's pulse rate will be fast and weak, and breathing will be fast and shallow.

If heat stress is untreated, it may progress to heat stroke.

Seek medical attention immediately if any of the following occurs:

- Symptoms are severe
- The victim has heart problems or high blood pressure

Otherwise, help the victim to cool off, and seek medical attention if symptoms worsen or last longer than an hour.

What to Do

Assist the victim in the following ways:

- Provide the victim with cool, nonalcoholic beverages using small sips
- Help the victim to rest
- Cool the victim using whatever methods you can, for example
 - Cool shower, bath, or sponge bath
 - An air-conditioned environment
 - Light clothing

Heat-Related Illness Prevention

Precautions to be Taken

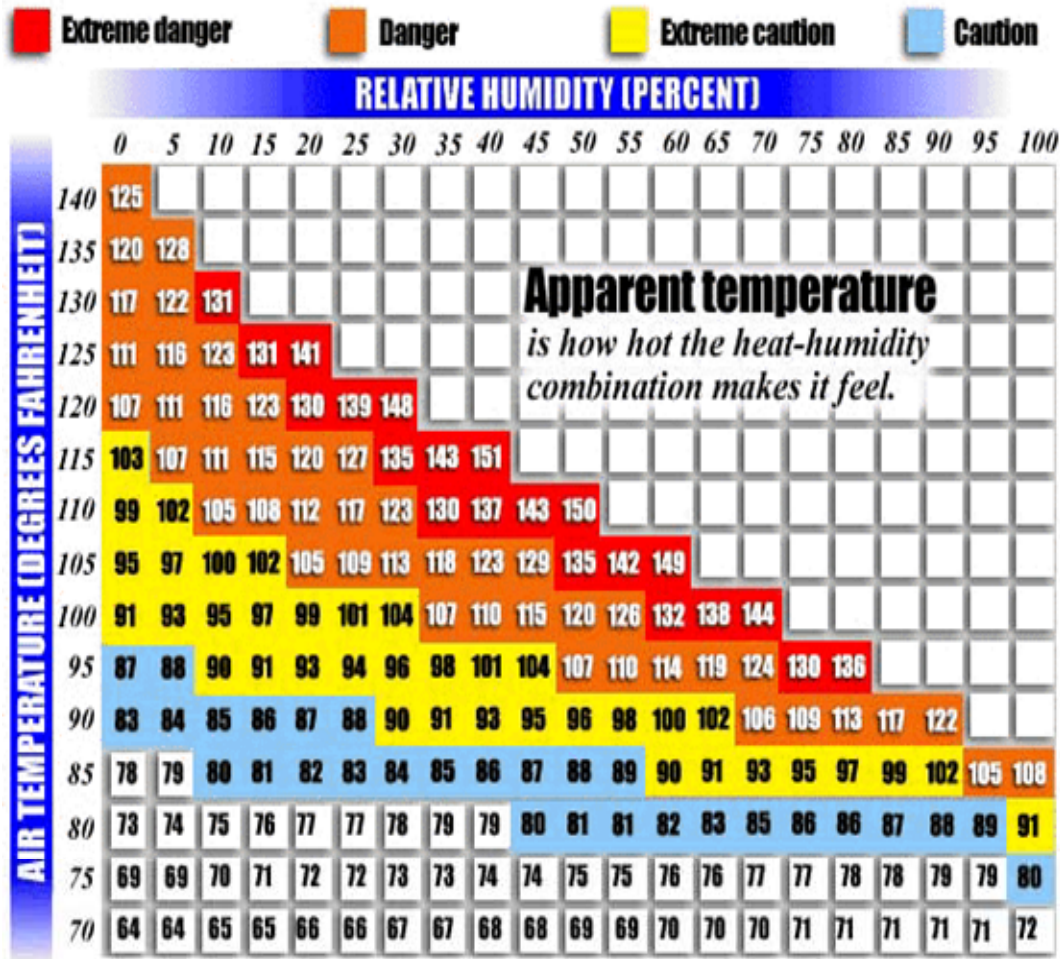
Supervisors

- Make sure that all affected employees are trained in heat-related illness awareness
- Monitor working conditions for situations which may lead to heat-related illness (see Table 1 on Page 22-3)
- Implement precautionary measures when environmental factors present a condition listed in Table 1
- Be aware of the symptoms of heat-related illness
- Ensure workers are supplied with plenty of water
- Make sure employees are taking appropriate breaks
- Schedule the heaviest work for cooler parts of the day. Adjust shifts when possible in coordination with management and Bargaining Unit Agreements
- Adjust schedules to allow for build-up of tolerance, as needed
- Ensure ventilation sources are provided as needed
- Provide resources for mitigating heat such as shielding, fans, or cool vests

Employees

- Be aware of what conditions may lead to heat-related illness (see Table 1 on Page 22-3)
- Be aware of the symptoms of heat-related illness
- Remember age and medical or physical conditions may increase your risk of heat-related illness
- Drink plenty of water before you start work
- Drink lots of water while working, even when not thirsty: about one cup every 15 minutes
- Consider sports drinks. Mixing them half and half with water works very well
- Avoid alcohol, caffeine, nicotine, and heavy meals
- Do the heaviest work in the cooler parts of the day
- If conditions suddenly change remember to build tolerance slowly
- Wear light colored, loose fitting clothing that is as lightweight as safely possible for your job
- Wear sunscreen and a wide brimmed hat when outdoors
- Take regular breaks away from the heat
- When working in enclosed spaces use adequate ventilation
- Block sources of radiant heat when possible
- When working in temperature extremes consider body cooling devices such as cool vests
- Keep an eye on each other and watch for symptoms of heat-related illness

Heat and Humidity Chart



Source: National Oceanic and Atmospheric Administration

Data compiled by the WA State Department of Labor and Industries

Note- The chart above is provided for informational purposes only. Conditions requiring action under this section can be found in Table 1 on Page 22-3