



Heat Stress Prevention

University Facilities

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Approved by: Bob Wells

1.0 Program Objective

UF has implemented this plan to ensure that no employee is exposed to “Heat Stress Illnesses” in the workplace and will evaluate if heat could be a problem on a particular day based on temperature and humidity levels, and then implement adequate controls, methods, or procedures to reduce the risk of heat stress illness.

2.0 Purpose and Scope

2.1 When the Body’s Core Temperature Rises

The human body functions best within a narrow range of internal temperature. This “core” temperature varies from 96.8°F to 100.4°F. To get rid of excess heat and keep internal temperature below 100.4°F, the body uses two cooling mechanisms:

- 2.1.1 The heart rate increases to move blood – and heat – from heart, lungs, and other vital organs to the skin.
- 2.1.2 Sweating increases to help cool bold and body. Evaporation of sweat is the most important way the body gets rid of excess heat.

2.2 Recognizing Heat Stress Disorders

Heat stress disorders range from minor discomforts to life-threatening conditions:

2.2.1 Heat Rash

Also known as prickly heat, is the most common problem in hot work environments. Symptoms include:

2.2.1.1 Red blotches and extreme itchiness in areas persistently damp with sweat

2.2.1.2 Prickling sensation on the skin where sweating occurs

Treatment: cool shaded environment, cool shower, thorough drying.

2.2.2 Heat Exhaustion

Occurs when the body can no longer keep blood flowing to supply vital organs and send blood to the skin to reduce body temperature at the same time. Signs and symptoms of heat exhaustion include:

2.2.2.1 Weakness

2.2.2.2 Difficulty continuing work

2.2.2.3 Headache

2.2.2.4 Breathlessness

2.2.2.5 Nausea or vomiting

2.2.2.6 Feeling faint or actually fainting

Treatment: heat exhaustion casualties respond quickly to prompt first aid. If not treated promptly, however, heat exhaustion can lead to heat stroke – a medical emergency. First, call 911 and then help the casualty cool off by resting in a cool place, drinking cool water, removing unnecessary clothing, loosening clothing, and showering or sponging with cool water. *It usually takes at least 30 minutes to cool the body down once a worker becomes overheated and suffers heat exhaustion.*

2.2.3 Heat Cramps

Under extreme conditions the body may lose salt through excessive sweating, where heat cramps may occur. These are spasms in larger muscles – usually back, leg, and arm. Cramping creates hard painful lumps within the muscles.

Treatment: Shade, stretch and massage the muscles; replace salt by drinking commercially available carbohydrate/electrolyte replacement fluids.

2.2.4 Heat Stroke

Occurs when the body can no longer cool itself and body temperature rises to critical levels. **HEAT STROKE REQUIRED IMMEDIATE MEDICAL ATTENTION.** The primary signs and symptoms of heat stroke are:

2.2.4.1 Confusion

2.2.4.2 Irrational behavior

2.2.4.3 Loss of consciousness

2.2.4.4 Convulsions

2.2.4.5 Lack of sweating

2.2.4.6 Hot, dry skin

2.2.4.7 Abnormally high body temperature – for example, 104°F

Treatment: For any worker showing signs or symptoms of heat stroke, call 911. Provide immediate, aggressive, general cooling in a shaded area. Place in cool shower or spray with cool water from a hose.

2.3 Controlling Heat Stress

Heat stress can be controlled through education, engineering, and work procedures.

2.3.1 Training and Education

According to the National Institute of Occupational Safety and Health (NIOSH), heat stress training should cover the following components:

2.3.1.1 Knowledge of heat stress hazards.

2.3.1.2 Recognition of risk factors, danger signs, and symptoms.

2.3.1.3 Awareness of first-aid procedures for, & potential health effects of, heat stroke.

2.3.1.4 Employee responsibilities is avoiding heat stress.

2.3.1.5 Dangers of using alcohol and/or drugs in hot work environments.

2.3.2 Employee Training

Training in the following topics will be provided to all supervisory and non-supervisory employees:

2.3.2.1 Environmental and personal risk factors for heat illness.

2.3.2.2 Procedures for identifying, evaluating, and controlling exposures to the environmental and personal risk factors for heat illness.

2.3.2.3 Importance of frequent consumption of water (up to 4 cups per hour).

2.3.2.4 The importance of acclimatization.

2.3.2.5 Different types of heat illness and common signs and symptoms of heat illness.

2.3.2.6 The importance of immediately reporting to the employer or designee symptoms or signs of heat illness.

2.3.2.7 Procedures for responding to symptoms of possible heat illness, including how emergency medical services will be provided should they become necessary.

2.3.2.8 Procedures for contacting emergency medical services, and if necessary, for transporting employees to a point where they can be reached by medical service personnel.

2.3.2.9 How to provide clear and precise directions to the work site.

2.3.3 Supervisor Training

Prior to assignment to supervision of employees working in the heat, training on the following topics will occur:

2.3.3.1 The information provided for employee training. Procedures the supervisor will follow to implement controls as determined by the employer.

2.3.3.2 Procedures the supervisor will follow when an employee exhibits symptoms consistent with possible heat illness, including emergency response procedures.

2.3.4 Engineering Controls

Engineering controls are the most effective means of preventing heat stress disorders and should be the first method of control. Engineering controls seek to provide a more comfortable workplace by using:

2.3.4.1 Reflective shields to reduce radiant heat.

2.3.4.2 Fans and other means to increase airflow in work areas.

2.3.4.3 Mechanical devices to reduce the amount of physical work.

2.3.5 Work Procedures

The risks of working in hot environment can be reduced if labor and management cooperate to help control heat stress.

2.3.6 Management

2.3.6.1 Give workers frequent breaks in a cool shaded area away from heat (cooling period no less than 5 minutes). The area should not be so cool that it causes cold shock – around 75° F is ideal.

2.3.6.2 Increase air movement by using fans where possible. This encourages body cooling through the evaporation of sweat.

2.3.6.3 Provide unlimited amounts of conveniently located potable drinking water.

2.3.6.4 Allow sufficient time for workers to become acclimated. A properly designed and applied acclimatization program decreases the risk of heat-related illnesses. Such a program exposes employees to work in a hot environment for progressively longer periods. NIOSH recommends that for workers who have had previous experience in hot jobs, the regimen should be:

- 50% exposure on day one
- 60% on day two
- 80% on day three
- 100% on day four

2.3.6.5 For new workers in a hot environment, the regimen should be 20% on day one, with a 20% increase in exposure each additional day.

2.3.6.6 Make allowances for workers who must wear personal protective clothing and equipment that retains heat and restricts the evaporation of sweat.

2.3.6.7 Schedule hot jobs for the cooler part of the day; schedule routine maintenance and repair working hot areas for the cooler seasons of the year.

2.3.6.8 Consider the use of cooling vests containing ice packs or ice water to help rid bodies of excess heat.

2.3.7 Labor

2.3.7.1 Wear light, loose clothing that permits the evaporation of sweat.

2.3.7.2 Drink plenty of water or sports beverages to keep hydrated. Do not wait until you are thirsty.

- 2.3.7.3 Avoid beverages such as tea, coffee, or beer that make you pass urine more frequently. Where personal PPE must be worn:
 - Use the lightest weight clothing and respirators available.
 - Wear light-colored garments that absorb less heat from the sun.
 - Use PPE that allows sweat to evaporate.
- 2.3.7.4 Avoid eating hot, heavy meals. They tend to increase internal body temperature by redirecting blood flow away from the skin to the digestive system.
- 2.3.7.5 Do not take salt tablets unless a physician prescribes them. Natural body salts lost through sweating are easily replaced by a normal diet.

2.4 Emergency Medical Response

UF will ensure the availability of a suitable number of appropriately trained persons to render first aid. UF will inform all employees of the procedure to follow in case of injury or illness.

2.4.1 Emergency Transportation

Before workers are sent to a work site, UF will ensure that arrangements are in place to transport injured or ill workers from the work site to the nearest health care facility. If ambulance service is not readily available to the work site or travel conditions are not normal, UF will provide proper equipment for the prompt transportation of the injured or ill person to a physician or hospital where emergency care is provided. UF will ensure that other transportation is available that:

- 2.4.1.1 Is suitable, considering the distance to be traveled and the types of acute illnesses or injuries that may occur at the work site.
- 2.4.1.2 Protects occupants from the weather.
- 2.4.1.3 Have systems that allow the occupants to communicate with the health care
- 2.4.1.4 Facility to which the injured or ill worker is being taken.
- 2.4.1.5 Can accommodate a stretcher and an accompanying person if required to.

2.4.2 Emergency Communication

UF will provide an effective communication system for contacting hospitals or other emergency medical facilities, physicians, ambulance, or fire services. In the case of remote job sites, provisions for CB-type, 2-way radio communications will be implemented. The telephone numbers of the following emergency services in the area shall be posted near the job telephone or otherwise made available to the employees where no job site telephone exists:

- 2.4.2.1 A physician and at least one alternate if available.
- 2.4.2.2 Hospitals.
- 2.4.2.3 Ambulance services.
- 2.4.2.4 Fire-protection services.

3.0 Conclusion

Heat stress at its simplest is the stress placed on the body by heat. Heat stress can be as minor as a heat rash or as critical as heat stroke. The foregoing plans, procedures, and actions have been established to manage activities under hot, humid conditions.