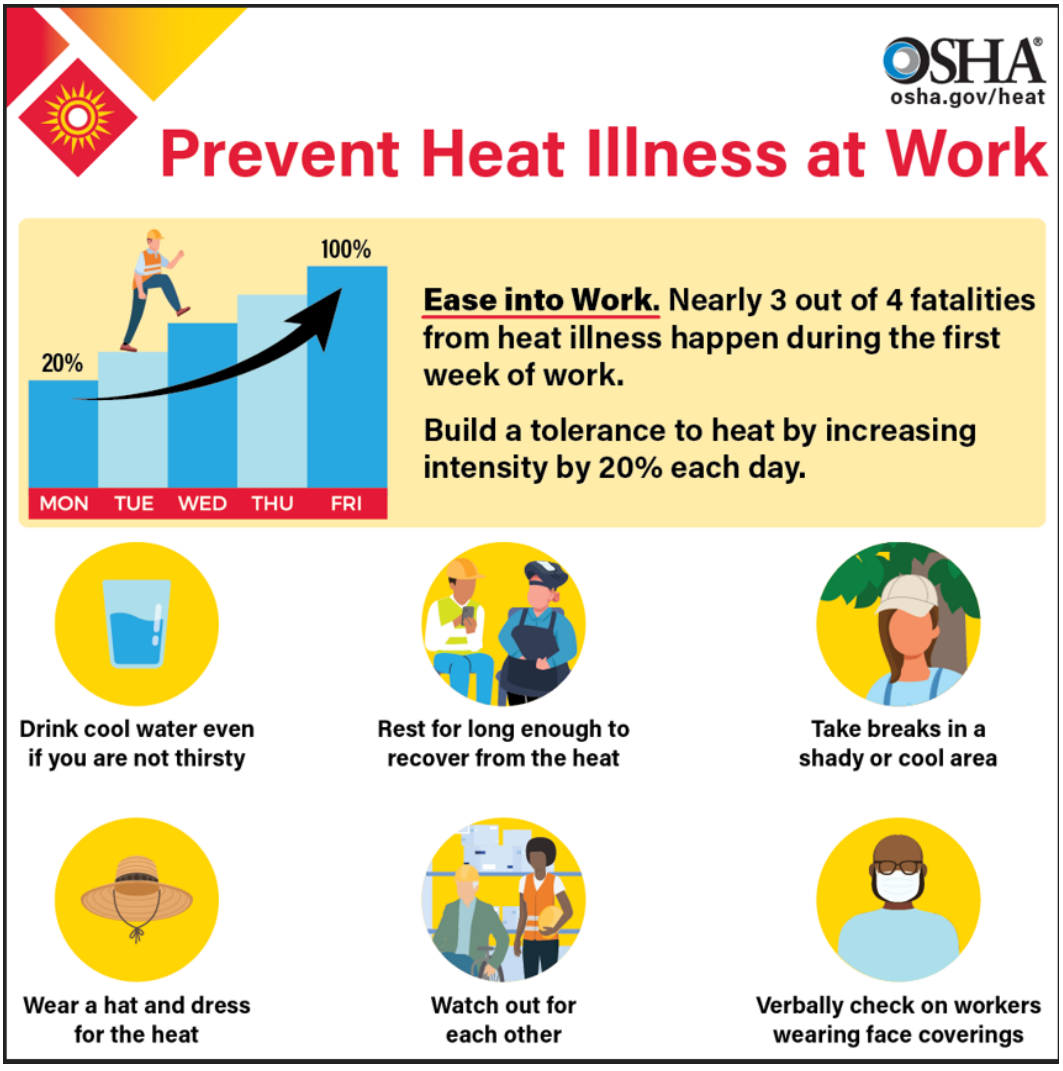
Liberty University

Heat Illness Prevention Program/Policy (HIPP)



PURPOSE

Liberty University is committed to providing a safe and healthful work environment for our entire staff. In pursuit of this endeavor, the University has developed this program/policy to provide employees with the training and equipment necessary to protect themselves from heat related illnesses.

SCOPE

This program implements efficient and safe work practices that will prevent or significantly reduce the potential for both indoor and outdoor heat-related illnesses among employees. It will be used for training new employees and for annual refresher training of employees. All employees potentially exposed to hot working environments are subject to this program.

POLICY

Every Liberty University Department that has employees that work in hot areas, either inside or outside are responsible for the implementation and application of this heat illness prevention program. It is the responsibility of supervisors who have employees working outside or in areas of high heat to confirm temperature conditions and implement the precautions as prescribed in this program/policy.

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.

RESPONSIBILITIES

A. Program Administrator

The LU Environmental Health & Safety Division (EHS) provides:

- Program/Policy oversight and consultation to LU departments.
- Training on the Heat Illness Prevention Program, associated hazards, general safe work practices, and program requirements.
- Guidance on maintenance of applicable records.
- Program reviews and updates, as necessary.
- Continual safety evaluations of work operations and enforcement of this Program. ********EHS staff are authorized to halt any unsafe work practice that is not in accordance* with this or any other LU Environmental Health & Safety Policy or Program where there is the potential for injury or death.**

B. Departments

LU Departments are responsible for providing a safe work environment for their staff by following health and safety policies and procedures. LU Departments are expected to maintain a safe and healthy living, learning, and working environment for faculty, staff, students, and visitors to our campus. LU Departments should designate responsible persons to coordinate the requirements of this program with employees and ensure that procedures are followed, personnel have been trained and are familiar with the hazards of working in high heat conditions, precautions to take and response to a heat related illness/emergency.

C. Supervisors

Supervisors are responsible for identifying heat exposure hazards and for identifying which employees require training prior to working in high heat work processes. Supervisors must identify and provide the necessary training, equipment, access to water, etc. to ensure the safety of their employees when working in high heat conditions. The Supervisor shall be a Competent Person, as defined by OSHA, or assign someone to be the competent person for the work group. OSHA defines a Competent person as:

- A person who can identify existing and predictable hazards in the surroundings or identifying working conditions which are hazardous or dangerous to employees and who has authorization to take prompt corrective measures to eliminate them.

Note: It is the responsibility of Supervisors and Department Heads to ensure that all employees under their direction, which work in high heat conditions read and understand this document.

D. Employees

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

RISK FACTORS

The following are environmental risk factors for heat illness (see heat index on Page 11):

- Air temperature above 90° F
- Relative humidity above 40%
- Radiant heat from the sun and other sources
- Conductive heat sources such as dark-colored work surfaces
- Lack of air movement

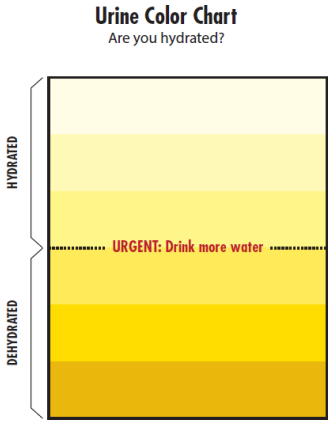
- Physical effort needed for the work
- Use of nonbreathable protective clothing and other personal protective equipment

The following are personal risk factors for heat illness:

- Lack of acclimation to warmer temperatures
- Poor general health
- Dehydration
- Alcohol consumption
- Caffeine consumption
- Previous heat-related illness
- Use of prescription medications that affect the body's water retention or other physiological responses to heat such as beta blockers, diuretics, antihistamines, tranquilizers, and antipsychotics.

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 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.



- Water and water containers shall meet the minimum OSHA standard for sanitation as found in 29 CFR 1926.51. See Appendix B.
- Liberty University will provide fresh, pure, and suitable cool water, free of charge, as close as practicable to areas where employees are located. Supervisors will visually examine the water to ensure purity and check that it is cool by pouring some on their skin.
- When employees are working in large areas water will be placed in several locations.

- Liberty University supervisors or designee will ensure that 1 quart of water per person per hour is available at the start of the shift and will have a water replenishment system in place.
- Employees shall report low water levels, as well as warm or dirty water containers, to supervisors.
- 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. This can be in a vehicle or building. 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.

ACCLIMATIZATION

- New employees and employees who have not previously worked in environments where the possibility that heat illness may occur will be given an opportunity for their bodies to gradually be exposed to heat. Employees will be given an opportunity to adapt to the heat by working in the heat for at least 2 hours a day, between 4 to 14 days.
- Supervisors will stress to new employees the importance of immediately reporting symptoms and signs of heat stress in themselves or in co-workers.

PROCEDURES FOR MONITORING THE WEATHER

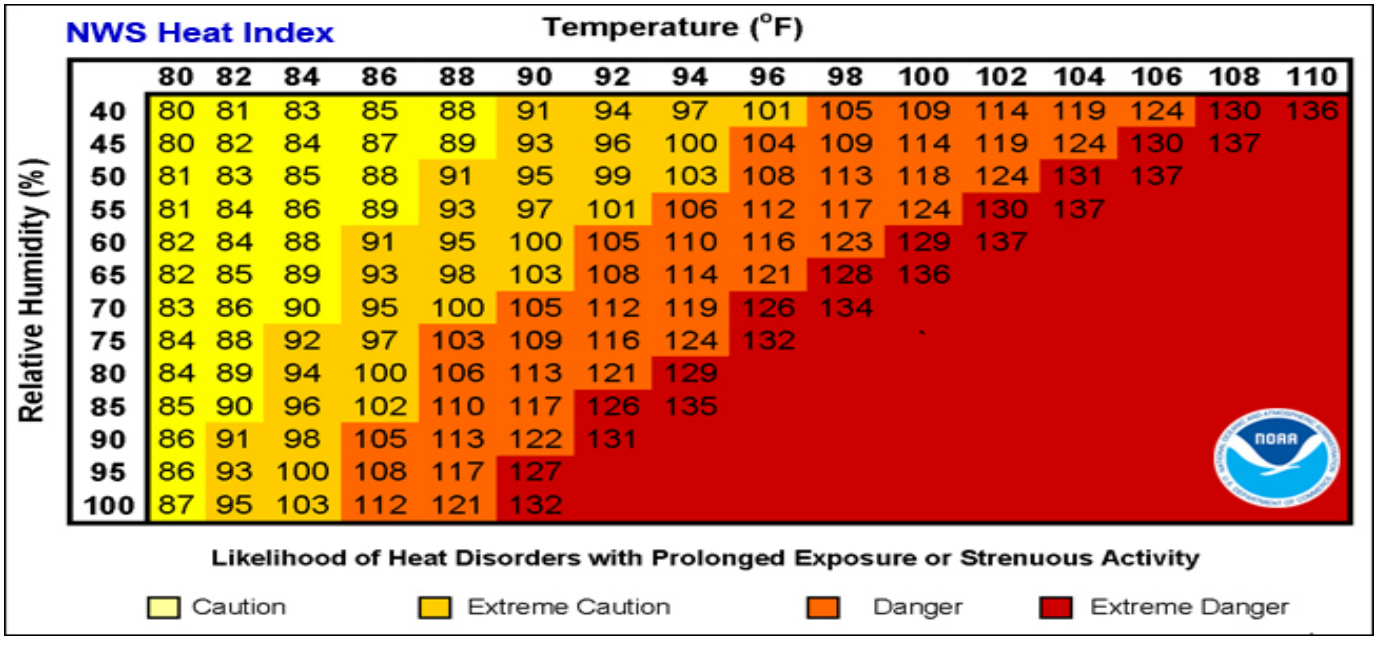
Supervisors will be trained and instructed to check in advance the extended weather forecast. Weather forecasts can be checked with the aid of the internet (http://www.weather.gov), by checking the Weather Channel TV Network or by using the CDC/NIOSH Heat Safety Tool App. The work schedule will be planned in advance, taking into consideration whether high temperatures or a heat wave is expected. Routine advance

weather monitoring will take place between the months of May and September; with additional advance monitoring conducted as needed during the remainder of the year.

In addition to advance weather monitoring, supervisors shall utilize one of the aforementioned weather services to review the day's forecasted temperature and humidity level prior to the start of work. Temperature and humidity levels will also be monitored on the worksite throughout the day and compared to the National Weather Service Heat Index to evaluate the risk level for heat illness and determine when precautionary heat illness prevention measures should be taken. Temperature will be monitored by means of dry bulb thermometer in degrees Fahrenheit. Temperature measurements will be taken in work areas where shade is not present.

HEAT INDEX (Information from the National Weather Service)

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. This has important considerations for the human body's comfort. When the body gets too hot, it begins to perspire or sweat to cool itself off. If the perspiration is not able to evaporate, the body cannot regulate its temperature. Evaporation is a cooling process. When perspiration is evaporated off the body, it effectively reduces the body's temperature. When the atmospheric moisture content (i.e., relative humidity) is high, the rate of evaporation from the body decreases. In other words, the human body feels warmer in humid conditions. The opposite is true when the relative humidity decreases because the rate of perspiration increases. The body actually feels cooler in arid conditions. There is direct relationship between the air temperature and relative humidity and the heat index, meaning as the air temperature and relative humidity increase (decrease), the heat index increases (decreases). supervisors and employees should use the heat index chart below to determine the hazard level for the existing temperature and relative humidity or use the OSHA/NIOSH App.

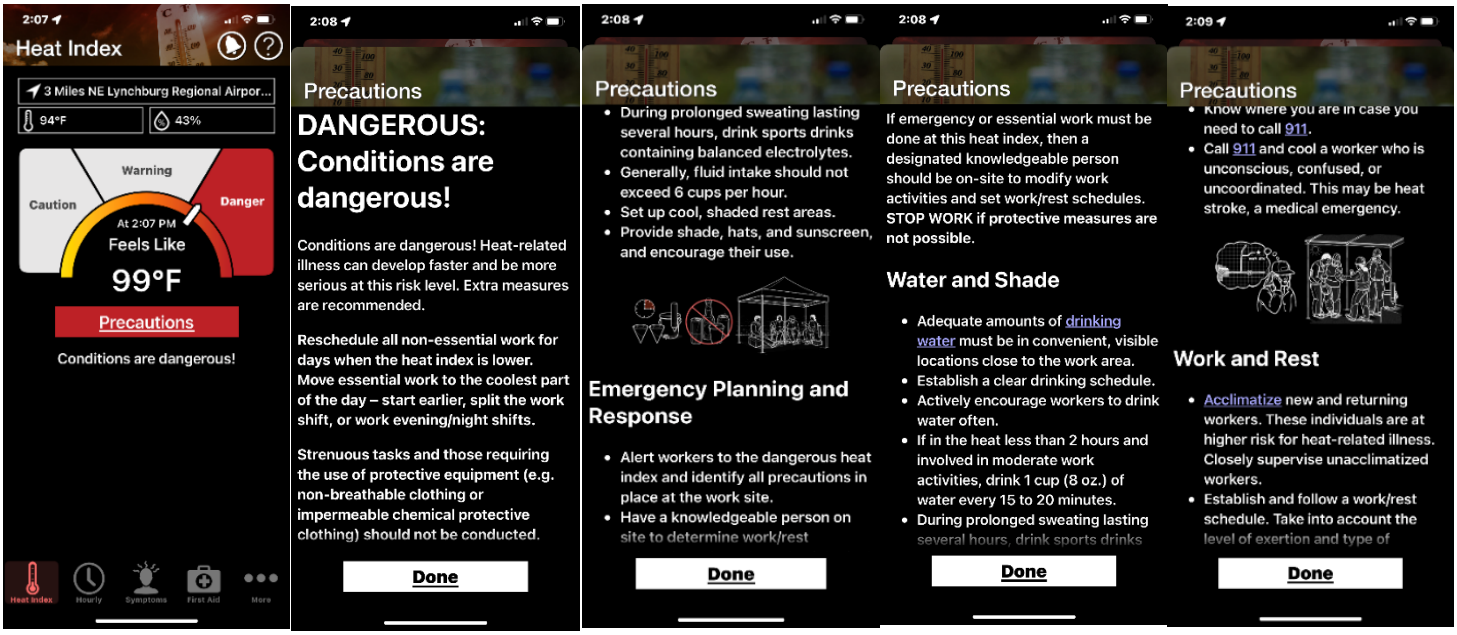


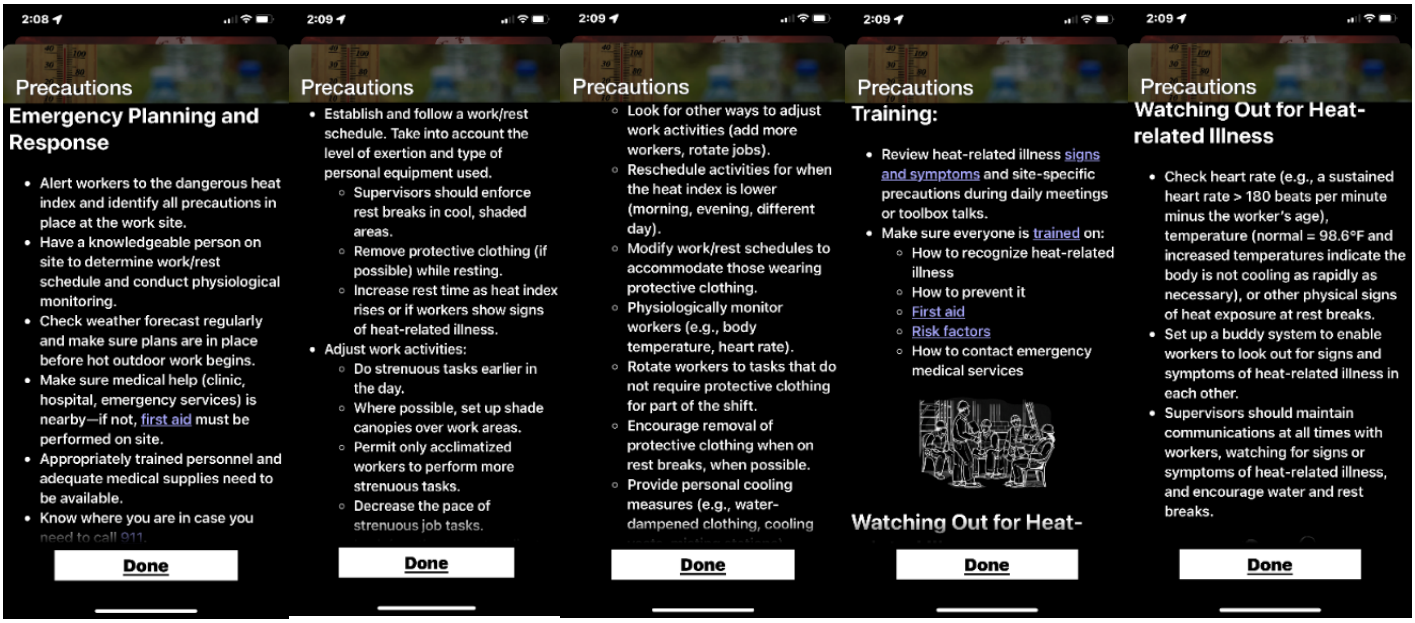
In order to determine the heat index using the chart above, you need to know the air temperature and the relative humidity. For example, if the air temperature is 100°F and the relative humidity is 55%, the heat index will be 124°F. When the relative humidity is low, the apparent temperature can actually be lower than the air temperature. For example, if the air temperature is 100°F and the relative humidity is 15%, the heat index is 96°F (use this calculator).

The heat index values in the chart above are for shady locations. If you are exposed to direct sunlight, the heat index value can be increased by up to 15°F. As shown in the table below, heat indices meeting or exceeding 103°F can lead to dangerous heat disorders with prolonged exposure and/or physical activity in the heat.

Classification	Heat Index	Effect on the body
Caution	80°F - 90°F	Fatigue possible with prolonged exposure and/or physical activity
Extreme Caution	90°F - 103°F	Heat stroke, heat cramps, or heat exhaustion possible with prolonged exposure and/or physical activity
Danger	103°F - 124°F	Heat cramps or heat exhaustion likely, and heat stroke possible with prolonged exposure and/or physical activity
Extreme Danger	125°F or higher	Heat stroke highly likely

OSHA/NIOSH HEAT SAFETY TOOL – The easiest way to determine heat conditions and precautions to take is to download the heat safety tool put out the US Department of Labor (DOL), Occupational Safety and Health Administration (OSHA) and the Centers for Disease Control and Prevention (CDC), National Institute for Occupational Safety and Health (NIOSH). It will give you all the information on temperatures and risks based on your location as seen in the pictures below.





HIGH HEAT PROCEDURES

High-heat procedures: Liberty University shall implement high-heat procedures when the temperature equals or exceeds 95° Fahrenheit. These procedures shall include the following to the extent practicable:

- A supervisor, or a qualified designee, shall directly observe employees, for signs and symptoms of heat illness. Each supervisor, or qualified designee, shall be responsible for observing no more than 20 employees.
- If impractical to directly observe employees, a mandatory buddy system shall be implemented or;
- Regular communication with employees working solo shall be implemented by either radio or cellular phone or;
- Other effective observation such as periodic checks.
- Employees shall be monitored for symptoms of heat illness and will be reminded throughout the work shift to drink plenty of water.
- Designating one or more employees on each worksite as authorized to call for emergency medical services and allowing other employees to call for emergency services when no designated employee is available.
- New employees will be will closely supervised for the first 14 days of employment, unless the new employee indicates at the time of hire that they have been doing similar work for at least 10 of the past 30 days, and for more than 4 hours per day.
- Daily a Pre-shift meeting shall be performed (part of the Job Hazard Analysis) before the commencement of work to review the high heat procedures, encourage employees to drink plenty of water, and remind employees of their right to take a cool-down rest when necessary.

For employees employed in heavy outdoor work activities such as landscaping or grass maintenance, the following shall also apply:

- When temperatures reach 95° or above, department supervisors shall ensure that the employee takes a minimum ten-minute net preventative, cool-down rest period every two hours.

- The preventative, cool-down rest period required by this paragraph may be provided concurrently with any other meal or rest period if the timing of the preventative, cool-down rest period coincides with a required meal or rest period thus resulting in no additional preventative, cool-down rest period required in an eight-hour workday.
- If the workday will extend beyond eight hours, then an additional preventative cool-down rest period will be required at the conclusion of the eighth hour of work; and if the workday extends beyond ten hours, then another preventative cool-down rest period will be required at the conclusion of the tenth hour and so on.

For purposes of this section, preventative, cool-down rest period has the same meaning as "recovery period."

BEST PRACTICES

Best practices could include providing employees with:

1. Containers that hold ice or otherwise keep drinking water and other beverages cold.
2. Chilled beverages such as electrolyte type sports drinks. Discourage caffeine consumption.
3. Encourage employees to bring food sources that include fruits high water content (watermelon, grapes, oranges).
4. Shaded areas with misting fan if air-conditioned facility is not available.
5. Heat-reflective work clothing such as light-colored, breathable uniforms with UVA protection of at least 30.
6. Evaporative accessories (cooling neck wraps, head bands)
7. Cooling vests designed to safely use ice packs.
8. Ventilated PPE (high-visibility garments or powered air purifying respirators, if appropriate)
9. Cell phone text orders from supervisor to stop and rest in shade and drink.

TRAINING

Training is a crucial part of the Heat Illness Prevention Plan, particularly with respect to emergency response.

At a minimum Heat Illness Prevention training shall be provided to all supervisory and non-supervisory employees and shall include the following elements:

1. The environmental and personal risk factors for heat illness.
2. Procedures described above for complying with the requirements of the Heat Illness Prevention Plan.
3. The importance of frequent consumption of small quantities of water, up to 4 cups per hour, when the work environment is hot, and the employees are likely to be sweating more than usual in the performance of their duties.
4. The importance of acclimatization.
5. The different types of heat illness and the common signs and symptoms of heat illness.

6. The importance for employees to immediately report to their supervisor symptoms or signs of heat illness in themselves or in co-workers.
7. Procedures for responding to symptoms of heat illness, including how emergency medical services will be provided should they become necessary.
8. Procedures for contacting emergency medical services, and if necessary, for transporting employees to a point where they can be reached by an emergency medical service provider.
9. Procedures for ensuring that, in the event of an emergency, clear and precise directions to the work site can and will be provided as needed to emergency responders.

Refresher training is required annually for supervisors and employees working in high heat conditions. Training shall be completed in late April or Early May of each year.

HEAT-RELATED ILLNESSES

Heat Rash

Heat rash is a skin irritation caused by excessive sweating during hot, humid weather.

Symptoms

Symptoms of heat rash include:
- Red clusters of pimples or small blisters.
- Usually appears on the neck, upper chest, groin, under the breasts, and in elbow creases.

First Aid

Workers who have heat rash should:
- Work in a cooler, less humid environment, if possible.
- Keep the rash area dry.
- Apply powder to increase comfort.
- Don't use ointments and creams.

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.

Symptoms

Muscle cramps, pain, or spasms in the abdomen, arms, or legs.

First Aid

Workers with heat cramps should do the following:
- Drink water and have a snack or a drink that replaces carbohydrates and electrolytes (such as sports drinks) every 15 to 20 minutes.

- Avoid salt tablets.
- Get medical help if the worker:
    - Has heart problems.
    - Is on a low sodium diet.
    - Has cramps that do not subside within 1 hour.

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
Symptoms of heat syncope include:
- Fainting (short duration)
- Dizziness
- Light-headedness from standing too long or suddenly rising from a sitting or lying position.

First Aid
Workers with heat syncope should:
- Sit or lie down in a cool place.
- Slowly drink water, clear juice, or a sports drink.

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
Symptoms of rhabdo include:
- Muscle cramps/pain
- Abnormally dark (tea or cola-colored) urine
- Weakness
- Exercise intolerance
- Asymptomatic

First Aid
Workers with symptoms of rhabdo should:
- 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).

Heat Exhaustion

Heat exhaustion is the body's response to an excessive loss of water and salt, usually through excessive sweating. Heat exhaustion is most likely to affect:
- The elderly
- People with high blood pressure

- Those working in a hot environment

Symptoms
Symptoms of heat exhaustion include:
- Headache
- Nausea
- Dizziness
- Weakness
- Irritability
- Thirst
- Heavy sweating
- Elevated body temperature
- Decreased urine output

First Aid
Treat a worker who has heat exhaustion by doing the following:
- Take worker to a clinic or emergency room for medical evaluation and treatment. Follow LU protocol for employee injury, i.e., accident report, contact Human Resources, etc. Medical care is the highest priority.
- Call LU Emergency Communications at if on campus 592-3911, if off campus call 911 if medical care is unavailable.
- Have someone stay with the worker until help arrives.
- Remove the worker from the hot area and give liquids to drink.
- Remove unnecessary clothing, including shoes and socks.
- Cool the worker with cold compresses or have the worker wash their head, face, and neck with cold water.
- Encourage frequent sips of cool water.

Heat Stroke

Heat stroke is the most serious heat-related illness. It occurs when the body can no longer control its temperature: the body's temperature rises rapidly, the sweating mechanism fails, and the body is unable to cool down. When heat stroke occurs, the body temperature can rise to 106°F or higher within 10 to 15 minutes. Heat stroke can cause permanent disability or death if the person does not receive emergency treatment.

Symptoms
Symptoms of heat stroke include:
- Confusion, altered mental status, slurred speech
- Loss of consciousness (coma)
- Hot, dry skin or profuse sweating
- Seizures
- Very high body temperature
- Fatal if treatment delayed

First Aid
Take the following steps to treat a worker with heat stroke:

- Call LU Emergency Communications at if on campus 592-3911, if off campus call 911 if medical care is unavailable.
- Stay with the worker until emergency medical services arrive.
- Move the worker to a shaded, cool area and remove outer clothing.
- Cool the worker quickly, using the following methods:

    - With a cold water or ice bath, if possible
    - Wet the skin
    - Place cold wet clothes on the skin
    - Soak clothing with cool water
- Circulate the air around the worker to speed cooling.
- Place cold wet clothes or ice on the head, neck, armpits, and groin; or soak the clothing with cool water.

EMERGENCY RESPONSE PROCEDURES

All supervisors and management personnel are required to take immediate action if an employee exhibits signs or symptoms off heat illness. Emergency response procedures will include but not be limited to the following actions:

- Ensure that effective communication by voice, observation, or electronic means are maintained so that employees at the high temperature work site can contact a supervisor or emergency medical service when necessary.
- Cellphones, company radio, email and other electronic devices will be used for communication. If electronic devices are not reliable forms of communication, the department leadership is responsible for developing alternative means of summoning emergency medical services.
- Supervisors and employees will be trained to recognize symptoms of heat stress, such as decreased level of consciousness, disorientation, irrational behavior, staggering, vomiting and convulsions; and are required to take immediate action if any employee exhibits signs of the mentioned symptoms of heat illness.
- Supervisors and employees will be taught first aid measures and how emergency services are to be provided to affected employees.
- Employees exhibiting signs or symptoms will be monitored and shall not be left alone or sent home without being first offered onsite first aid and/or being provided with emergency medical service.
- If deemed necessary, emergency medical services will be contacted, and employees will be transported to a place where they can be reached by emergency medical providers.
- In emergency events – clear and precise directions to work site will be provided to emergency responders.
- In the event that a work site is in a difficult to find location, an employee will be sent to meet emergency medical services at the nearest landmark; and lead them to the work site.

HEAT ILLNESS PREVENTION PLAN AUDIT

As part of the implementation of the Heat Illness Prevention Program, and to ensure the success of the HIPP, the Environmental Health & Safety Department will conduct assessments of the written plan and documentation by Supervisors and Managers. Assessments of the HIPP will be conducted annually. The assessment shall review the plan to ensure that the heat illness prevention procedures continue to be effectively implemented. This will include, routine assessments of department staff working in hot conditions and will include:

- Ensuring that suitably fresh and cool water is routinely provided in the required amounts.
- Ensuring sufficient shade is routinely made available.
- Verifying that the required supervisor and employee training has been completed.

- A review of the effectiveness of emergency response procedures.
- Ensuring that employees are acclimatized as required.
- Ensuring that high heat procedures are implemented when the temperature reaches 95° Fahrenheit.

During the EHS site assessments, if a department or employees are found not complying with the HIPP, work activities will be immediately halted, and appropriate supervision/management will be contacted to address the situation.

ENFORCEMENT

Failure to follow the Liberty University Heat Illness Prevention Plan/Policy can result in life threatening or serious illness. Failure to follow this plan/policy can result in disciplinary action up to and including discharge.

QUESTIONS CONCERNING POLICY

Questions concerning this program/policy should be addressed to Environmental Health & Safety at 434-582-3389 or at lusafety@liberty.edu during normal business hours (7:00 am - 5:00 pm, Monday-Friday).

APPLICABLE REGULATIONS, STANDARDS AND REFERENCES

Employees and Supervisors are encouraged to obtain helpful information at OSHA's ***Heat Illness Prevention Campaign*** Website, located at the following link: https://www.osha.gov/heat.

Here employees and supervisors can find the downloadable ***NIOSH Heat Safety Tool Smartphone App*** for iPhone or Android.

Additionally, links are provided to employees to download the ***Prevent Heat Illness at Work*** brochure: https://www.osha.gov/sites/default/files/publications/OSHA4135.pdf and the ***Prevent Heat Illness at Work OSHA Alert*** bulletin: https://www.osha.gov/sites/default/files/publications/OSHA3975.pdf and other additional resource information.

CDC- National Institute for Occupational Safety and Health (NIOSH) – Heat Stress

CDC/NIOSH Heat Stress Acclimatization

CDC/NIOSH – Criteria for a Recommended Standard Occupational Exposure to Heat and Hot Environments

CDC/NIOSH – First Aid for Heat Illness

OSHA – Remembering Tim: A Life Lost to Heat Illness at Work - Video

Liberty University

Heat Illness Prevention Program/Policy

Revision Tracking

Revision Number	Revision Description	Date Originated/ Revised	Policy Author/Reviser:	Policy Approvers
Original		6/27/22	Greg Bennett Bob Drane	Ron Sloan John Peterson Greg Bennett