

UMBC OFFICE OF ENVIRONMENTAL SAFETY AND HEALTH (ESH) PROCEDURE	TITLE: Heat Safety Program
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I. PURPOSE

The purpose of the Heat Safety Program is to establish standards and guidelines for the effective monitoring and prevention of heat stress and heat-related illness to members of the UMBC community. This procedure was developed using guidance from heat safety and heat illness prevention materials provided by the Occupational Safety and Health Administration (OSHA), Maryland Occupational Safety and Health (MOSH), and the National Institute for Occupational Safety and Health (NIOSH).

This procedure also seeks to ensure compliance with the MOSH Heat Illness Prevention and Heat Stress Standards - Code of Maryland Regulations (COMAR) Chapter 09.12.32, as well as the the OSHA General Duty Clause, section 5(a)(1) of the Occupational Safety and Health Act of 1970.

II. SCOPE

This Heat Safety Program applies to all UMBC faculty, staff, and student-employees, and shall take effect when personnel perform activities where the heat index equals or exceeds 80 degrees Fahrenheit. This includes outdoor environments, as well as unconditioned indoor environments that meet or exceed these conditions.

This procedure does not apply to:

- Incidental heat exposure lasting under 15 minutes.
- Work performed under emergency operations, such as an event that requires the involvement of law enforcement, firefighting, emergency medical services, rescue or evacuation, or emergency restoration of essential utilities or telecommunications.
- Environments where a mechanical ventilation system or fan is in place and is capable of maintaining the heat index below 80 degrees Fahrenheit.

III. DEFINITIONS

- <u>Heat Acclimatization</u> The improvement in heat tolerance that comes from gradually increasing the intensity or duration of work performed in a hot setting. The best way to acclimatize the body to the heat is to increase the workload performed in a hot setting gradually over a period of 1 2 weeks.
- <u>Heat Index</u> A measure of how hot it feels when relative humidity is considered with the air temperature.
- <u>Heat-Related Illness</u> A series of conditions brought on by the inability of the body to effectively rid itself of excess heat.
- <u>Heat Stress</u> Perceived discomfort and physiological strain associated with exposure to a hot environment.
- <u>High Heat</u> A heat index equalling or exceeding 90 degrees Fahrenheit.
- <u>Humidity</u> The concentration of water vapor present in the air.
- <u>Personal Risk Factors</u> These are risk factors that individuals may experience that impact how they are affected by heat and may necessitate the need for adjustments to assigned work. Personal risk factors may include things like:
 - Health conditions, such as diabetes, heart disease, high blood pressure, obesity, asthma or respiratory ailments, or a history of heat-related illness.
 - Medications may also impact one's ability to tolerate heat stress. Some examples include medications such as blood pressure medication, diuretics, antihistamines, muscle relaxers, psychiatric medications, and sedatives.
 - Other physical characteristics can present a risk factor, such as older age (60 years or older), lower physical fitness levels, pregnancy, and working in direct sunlight or a direct heat source.

IV. PROCEDURE

Overview of Heat Stress

Heat stress, as previously defined, refers to conditions that expose the body to heat to such a degree that the body's ability to cool itself is challenged or compromised. When a person is exposed to heat stress, the body is at risk for what are known as heat-related illnesses, which can range from less severe to life-threatening or fatal.

The most common types of heat-related illnesses are (in order of least to most severe/fatal):

- Heat rash Red, rashy clusters of blisters or pimples.
- Heat cramps muscle cramps, pains, or spasms in places like the abdomen, arms, or legs.

- Heat syncope (fainting) Fainting, dizziness, or light-headedness after prolonged standing or suddenly rising from a sitting or lying position, brought on or exacerbated by heat.
- Heat exhaustion symptoms such as headache, nausea, dizziness or weakness, irritability, thirst, heavy sweating, elevated body temperature, and decreased urine output.
- Heat stroke Signs include confusion, slurred speech, loss of consciousness, hot, dry skin, or profuse sweating, very high body temperature. This can be fatal if not treated promptly and must be treated as a medical emergency.

There are a variety of factors that can increase the risk of heat stress and heat-related illness, including:

- Personal risk factors (such as health condition, medications)
- High humidity
- Direct sun exposure (solar heat load)
- Lack of acclimatization
- Older age (over 60)
- History of heat illness or recent illness involving vomiting or diarrhea
- Physically demanding work requiring high levels of exertion
- Recent alcohol use (within previous 24 hours)

These are all important factors that must be taken into consideration by supervision and employees when taking steps to prepare for work on days where heat stress is an identified hazard.

Regarding Personal Risk Factors

Employees shall not be required to provide any specific health information or information regarding specific conditions or prescribed medications being taken as it relates to heat stress prevention. Employees must, however, report to their supervisor if they have personal risk factors or concerns that may necessitate the need for adjustments to any work assigned where heat exposure is a potential factor, so that the appropriate arrangements and provisions may be made.

Risk Assessment

Managers and supervisors shall take appropriate steps to determine the risk to workers who may be exposed to heat. This includes surveying the area where the work will take place to determine potential heat exposure, as well as determining any radiant heat sources, air movement, temperature, humidity, and personal risk factors. Once risk is assessed, appropriate provisions and controls shall be implemented. These are further described later in this procedure.

It is important to note that certain types of Personal Protective Equipment (PPE), such as equipment or clothing designed to protect against hazardous chemicals or against burns and fires (such as electrical or welding flame-resistant apparel) can increase the effects of heat on employees. This must be taken into consideration when assessing risk and implementing appropriate controls for employees who may be exposed to heat while wearing PPE to protect against other hazards.

Department Heat Stress Prevention and Management Plan

Department managers and supervisors shall complete an Appendix A: Department Heat Stress Prevention and Management Plan and implement on days where work will take place in indoor or outdoor conditions that meet or exceed a heat index of 80 degrees Fahrenheit for more than 15 consecutive minutes per hour.

The following elements will be included in the Department Heat Stress Prevention and Management Plan:

Required Employee Provisions

Access to Water

- Supervisors shall provide employees with access to cool, potable drinking water and encourage consumption frequently throughout the workday. 1 cup of water every 20 minutes should be encouraged.
- If plumbed potable drinking water (tap water) is not readily accessible, then portable water containers or bottled water must be made available before work takes place.
- Water must be kept in a clean and suitable environment.
- Water inventory must be monitored and replenished as frequently as necessary to ensure water supply is not depleted.
- Other hydration enhancing foods and drinks may also be provided (such as electrolyte drinks or frozen confections).

Access to Shaded or Conditioned Areas

- Supervisors shall be tasked with providing and ensuring access to open-air shaded areas or structures, or conditioned spaces that have sufficient ventilation or mechanical cooling.
- These areas shall be situated in close proximity to the work area to allow for rest and water breaks.

Personal Protective Clothing

- Employees shall be provided with appropriate protective clothing, such as:
 - Lightweight, breathable clothing
 - Cooling vests or similar gear
 - Reflective clothing designed to reduce radiant heat load

Work Practice Controls

Acclimatization

The goal of acclimatization is to gradually increase exposure time under hot environmental conditions over several days. This allows the body to adjust to hot conditions, which will result in more efficient evaporative cooling. For a period of 14 days, Supervisors and Managers must provide for acclimatization of exposed staff and and shall observe employees regularly for the symptoms of heat-related illnesses.

Acclimatization for employees is required when an employee is newly exposed to heat in the workplace, or when the employee returns to work after 7 (seven) or more consecutive days of absence from the workplace.

Supervisors shall develop and implement a written acclimatization schedule using one of the following methods:

- A schedule which gradually increases exposure time over a 5-14 day period, with a maximum 20% increase each day.
- A schedule which uses current NIOSH recommendations for acclimatization.
- A schedule that uses a combination of gradual introduction and alternative cooling and control measures that acclimate an employee to heat.

The schedule must include:

- Acclimated and unacclimated employees
- Environmental conditions and anticipated workload
- Impact of required clothing and PPE to the heat burden on employees
- Re-acclimatization of employees as necessary
- The use of alternate cooling and other control measures

Work Scheduling

• Work shall be scheduled during cooler parts of the day whenever possible to minimize heat exposure.

Work-Rest Cycles

- Supervisors shall implement a work-rest schedule to shorten employee exposure to heat. This includes frequent short breaks, which are more effective than longer, less frequent breaks.
- Work-rest schedules shall be set by supervision at a schedule that is determined necessary by the supervisor, based on the heat index, the tasks being performed, and personal risk factors of the employee(s) performing the work.
- Rest breaks shall be in appropriate shaded or conditioned areas.

Employee Observation (Buddy System)

• Supervisors shall encourage their employees to utilize the buddy system, which involves employees monitoring coworkers and peers and checking in on each other frequently throughout the day.

• Working alone in the heat or in unconditioned areas should be discouraged and avoided whenever possible.

High Heat Procedures

High Heat Procedures are additional preventive measures that will be utilized when the heat index equals or exceeds 90 degrees Fahrenheit.

The high-heat procedures shall include a work and rest schedule to protect employees from heat-related illness that is adjusted for environmental conditions, workload, and impact of required clothing or personal protective equipment.

Department supervision shall document high heat procedures in Appendix A: Department Heat Stress Prevention and Management Plan.

High heat procedures must include:

- A minimum rest period of 10 minutes for every 2 hours worked where employees are exposed to a heat index above 90 and below 100 degrees Fahrenheit; and
- A minimum rest period of 15 minutes for every hour worked where employees are exposed to a heat index above 100 degrees Fahrenheit; or
- A rest period as provided for in the current National Institute for Occupational Safety and Health recommendations for work and rest schedules to manage heat exposures.

Rest breaks may coincide with scheduled rest or meal periods.

Alternative cooling measures shall be implemented whenever possible. Examples might include increasing ventilation, bringing in cooler outside air, reducing the hot temperature of a radiant heat source, shielding the worker, and using air conditioning equipment: Alternative cooling measures must be readily available to employees during all periods of the work.

Additional examples of additional cooling measures:

- 1. Electrolyte replacement fluids
- 2. Cooling vests, bandanas
- 3. Personal Cooling Devices that utilize air, liquid, or ice
- 4. Reduce process heat and water vapor release (for example local exhaust ventilation)

5. Administrative Controls that set acceptable exposure times and allow for sufficient recovery (work / rest schedule changes). During a heat wave or heat spike, the workday will be cut short (e.g., 12:00 p.m.), be rescheduled (e.g., conducted at night or during cooler hours), or if at all possible, cease for the day.

6. Personal and peer/coworker monitoring for symptoms of heat-related illness (buddy system).

Emergency Response Plan

Heat-Related Medical Emergencies

In the event of a heat-related medical emergency on campus, notify Campus Police at extension 5-5555 (410-455-5555 from an outside line)- or call 911. For all off-campus emergencies, contact 911.

For more information and guidance on responding to different types of heat-related illnesses and medical emergencies, refer to Appendix B: Guidance for Heat-Related Medical Emergencies or visit the Environmental Safety and Health - Heat Safety web page.

Training

To ensure workers are prepared to work safely under hot and humid conditions, departments shall ensure that all personnel who may be exposed to heat stress and heat-related illnesses during work activities receive training on how to identify and protect themselves against the effects of heat stress and heat-related illness. New hires who start during the season of hot conditions must complete heat safety training prior to working under hot and humid conditions.

Heat safety training is provided by UMBC through the Webnet (e-Safety) online learning management system. The title of the module is Heat-Related Illness Awareness. Training is required on an annual basis prior to the start of the season for hot conditions. Department supervision shall be tasked with assigning this module to all affected employees.

Retraining shall also be required in the following circumstances:

- Following any heat-related illness, incident, or near-miss
- As changes in work conditions, processes, or environments dictate the need for retraining
- An employee demonstrates a deficient knowledge or understanding of the training material

Affected departments shall maintain current records of heat safety training for their employees and retain the records for at least one (1) year.

Contact Environmental Safety and Health (ESH) if assistance is needed with assigning or completing training.

V. ROLES AND RESPONSIBILITIES

Department and Area Leaders, Administrators, Deans

- Ensure departments and areas under their authority have the appropriate resources and provisions for protecting against heat stress and heat-related illness.
- Communicate Heat Safety Program responsibilities to management and supervision within the department.
- Ensure departmental compliance with the Heat Safety Program.

Department Management and Supervision

• Plan for, implement, and monitor heat-illness control measures for employees under their supervision

- Ensure employees complete all required training and utilize heat illness prevention resources and equipment.
- Complete the Appendix A: Heat-Illness Prevention and Management Plan when required.
- Report all injuries, incidents, and unsafe conditions to department leadership and Environmental Safety and Health.

Employees

- Completed required heat safety training.
- Monitor self and others' conditions throughout the day.
- Notify supervision of any personal risk factors that could impact the ability to work safely in the heat.
- Utilize all provided heat safety and heat-illness prevention resources and equipment.
- Report any hazardous conditions or other safety concerns to supervision.
- Immediately notify supervision of any heat-related injury, illness, or incident.

Environmental Safety and Health

- Monitor and review this procedure and all accompanying appendices for ongoing compliance and effectiveness and make revisions or corrections as necessary.
- Investigate and follow-up on any reported safety concerns or hazardous conditions relating to heat safety.
- Investigate injuries, illnesses, and incidents related to heat safety and provide recommendations for corrective actions and lessons learned to affected departments as needed.

VI. REFERENCES

- Appendix A: Department Heat Stress Management and Prevention Plan
- Appendix B: Guidance for Heat-Related Medical Emergencies
- UMBC Heat Safety Quick Reference Guide