Heat Stress Prevention and Management

Purpose

The purpose of this section is to establish the minimum requirements by which Carroll Community College (CCC) will attempt to ensure prevention and protection for employees from heat-related illnesses caused by heat stress in the workplace.

This program applies to all employees exposed to a heat index of 80 degrees Fahrenheit or higher during their work activities, both indoors and outdoors. Departments/Areas affected include:

- Athletics
- Campus Police
- Environmental Services
- Maintenance
- Theater Shop

Definitions

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

2. Alternative cooling and control measures – engineering, work-practice, administrative, or other controls to manage heat, including job rotation, mechanical ventilation systems, misting equipment, cooling vests, air-cooled or water-cooled garments, and access to recreation water.

3. Drinking water – potable water that is safe to drink and cool in temperature.

4. Heat index – a measure of how hot it feels when relative humidity is considered along with the actual air temperature, which can be extrapolated from temperature and relative humidity using the chart in Appendix A.

5. High-heat conditions – working conditions where the heat index of the work area equals or exceeds 90 degrees Fahrenheit.

References

Federal OSHA, General Duty Clause (Section 5[a][1])
Maryland Occupational Safety and Health (MOSH), COMAR 09.12.32

Procedures

Heat-Related Illness Prevention and Management Plan

1. Monitoring: Area/Departmental Supervisors are responsible to monitor the heat index using direct measurement or locally published weather data, and the chart in Appendix A to calculate heat index. Alternatively, the NIOSH Heat Safety Tool app can be downloaded and used (available from an app store) to determine if high heat conditions exist and whether they will impact planned activities, rest periods and water intake levels.

2. Drinking Water: Area/Departmental Supervisors are responsible for providing enough drinking water so that each employee under their supervision has at least 8 ounces of water every 15-20 minutes. This translates to 24-32 ounces per hour (per CDC) of cool, potable water close to the work area in the form of a nearby water fountain or in the form of bottled water. Supervisors are to encourage employees to drink water frequently. Drinking at shorter intervals is more effective than drinking large amounts infrequently.

3. Shade Access: Ensure shaded areas are available for rest breaks outdoors. If outdoor shade is not feasible, permit rest periods to take place in climate-controlled areas indoors or spaces with active means of cooling such as fans.

4. Rest Breaks: Implement rest break schedules using information on environmental conditions, workload, and available personal protective equipment. Encourage employees to take breaks as needed but not at a rate less frequent than that described in Appendix B.

5. Training: Employees in the job areas affected by the hazards of heat exposure will be trained in the causes of heat illness, the signs, symptoms and treatments of heat-related illnesses, and prevention measures. Training will be in a language and vocabulary understandable to the trainees. An excellent module named Heat Illness Prevention is available on CCC SafeColleges Learning Management System.

6. Emergency Response: If employees exhibit dizziness and blackout, call 911. If experiencing chills, it is crucial to take immediate action to cool the body and prevent further complications. Call 911, move the person to a cooler shaded area, remove excess clothing, apply cool, wet cloths or ice, encourage hydration (cool water or rehydration drink), and wait for medical assistance.

Acclimatization

Employees who are newly exposed to heat or are returning from 7 or more days of absence are to be provided with acclimatization for a period of up to 14 days. During the acclimatization period, employees are to be closely monitored through regular observation and/or communication.

1. Schedule: Gradually increase exposure time over 5-14 days, with a maximum 20% increase each day. Monitor employees for signs of heat-related illness during this period.
2. Monitoring: Use regular communication methods (phone, radio, buddy system) to monitor employees during acclimatization.

High-Heat Procedures

1. Additional Measures: Implement additional measures such as increased rest breaks, job rotation, and use of cooling devices or methods during high-heat conditions.
2. Heat Index Rest periods:
    a. Above 90°F and below 100°F Minimum of 10 minutes every 2 hours
    b. Above 100°F Minimum of 15 minutes every hour

Training

Carroll Community College will train employees who may be exposed to heat index of 80 degrees Fahrenheit or higher during their work activities. This training shall be completed before an employee performs related tasks and shall be conducted by a person competent in the subject matter. The training will be refreshed at intervals stipulated by the current and applicable OSHA standard.

All third-party contractors are responsible to ensure their employees are trained, certified, and/or licensed as required by the industry standards and all applicable OSHA standards related to the scope of work.

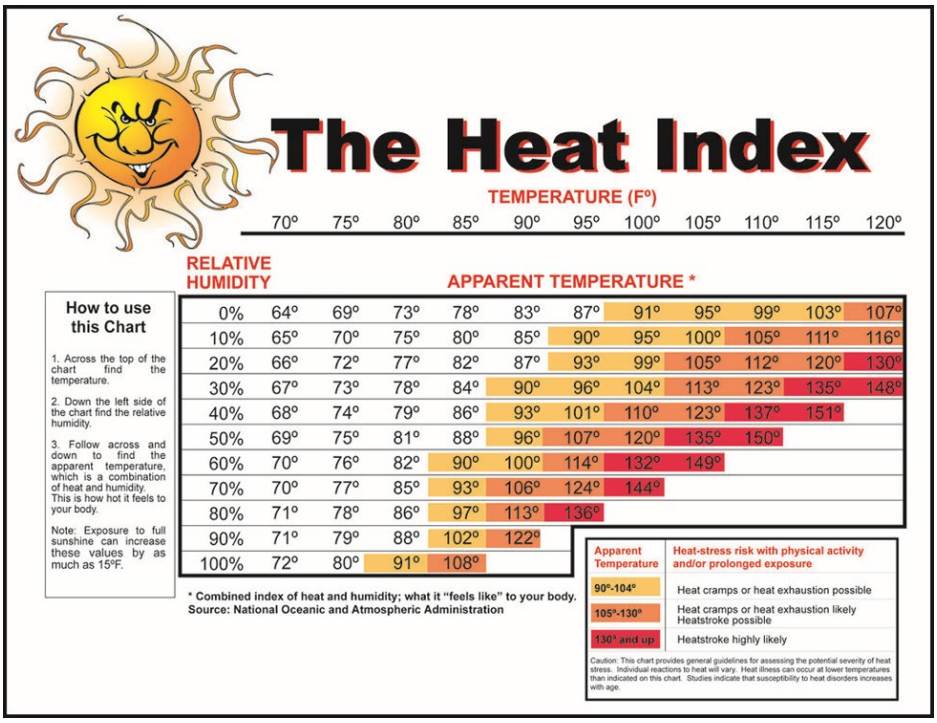
Record Keeping and Certification

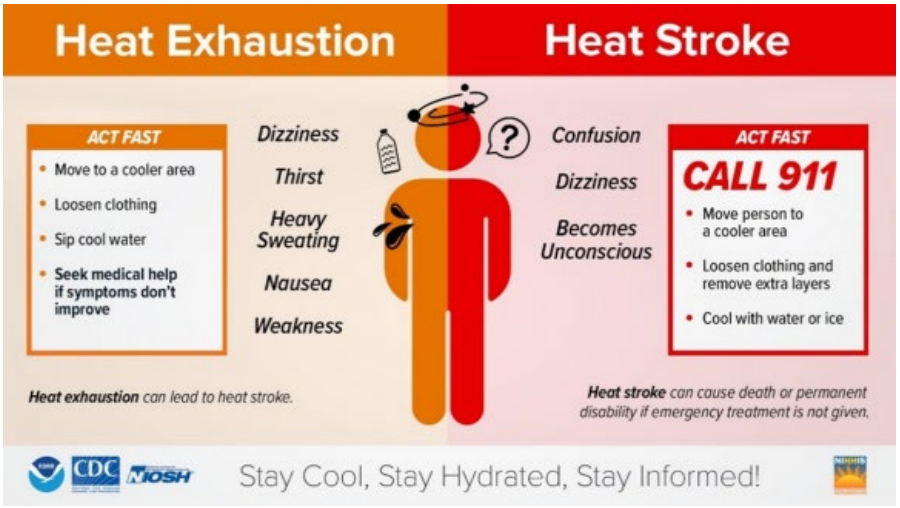
1. Safety Training records for Carroll Community College employees shall include the following:
    a. Names of training attendees.
    b. The dates of the training sessions.
    c. The contents or a summary of the training sessions.
    d. The name(s) and title(s) of person(s) conducting the training sessions.

2. Safety Training records shall be maintained in accordance with OSHA standards as well as incidents of heat-related illnesses.

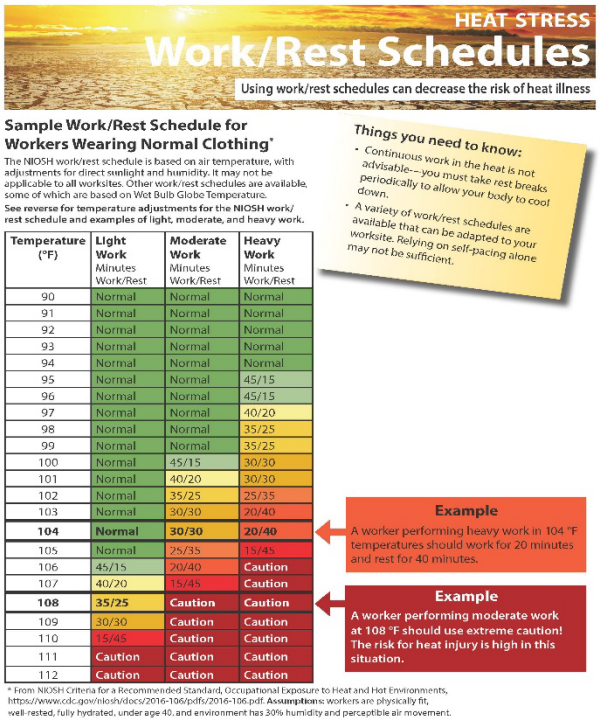
3. All third-party contractors are responsible to maintain and furnish on request safety training records for their employees in accordance with OSHA standards.

Appendix A





Appendix B



HEAT STRESS

Work/Rest Schedules

Using work/rest schedules can decrease the risk of heat illness

Sample Work/Rest Schedule for Workers Wearing Normal Clothing*

The NIOSH work/rest schedule is based on air temperature, with adjustments for direct sunlight and humidity. It may not be applicable to all worksites. Other work/rest schedules are available, some of which are based on Wet Bulb Globe Temperature.

See reverse for temperature adjustments for the NIOSH work/rest schedule and examples of light, moderate, and heavy work.

Temperature (°F)	Light Work Minutes Work/Rest	Moderate Work Minutes Work/Rest	Heavy Work Minutes Work/Rest
90	Normal	Normal	Normal
91	Normal	Normal	Normal
92	Normal	Normal	Normal
93	Normal	Normal	Normal
94	Normal	Normal	Normal
95	Normal	Normal	45/15
96	Normal	Normal	45/15
97	Normal	Normal	40/20
98	Normal	Normal	35/25
99	Normal	Normal	35/25
100	Normal	45/15	30/30
101	Normal	40/20	30/30
102	Normal	35/25	25/35
103	Normal	30/30	20/40
104	**Normal**	**30/30**	**20/40**
105	Normal	25/35	15/45
106	45/15	20/40	Caution
107	40/20	15/45	Caution
108	**35/25**	**Caution**	**Caution**
109	30/30	Caution	Caution
110	15/45	Caution	Caution
111	Caution	Caution	Caution
112	Caution	Caution	Caution

*From NIOSH Criteria for a Recommended Standard, Occupational Exposure to Heat and Hot Environments, https://www.cdc.gov/niosh/docs/2016-106/pdfs/2016-106.pdf. **Assumptions**: workers are physically fit, well-rested, fully hydrated, under age 40, and environment has 30% humidity and perceptible air movement.

Things you need to know:

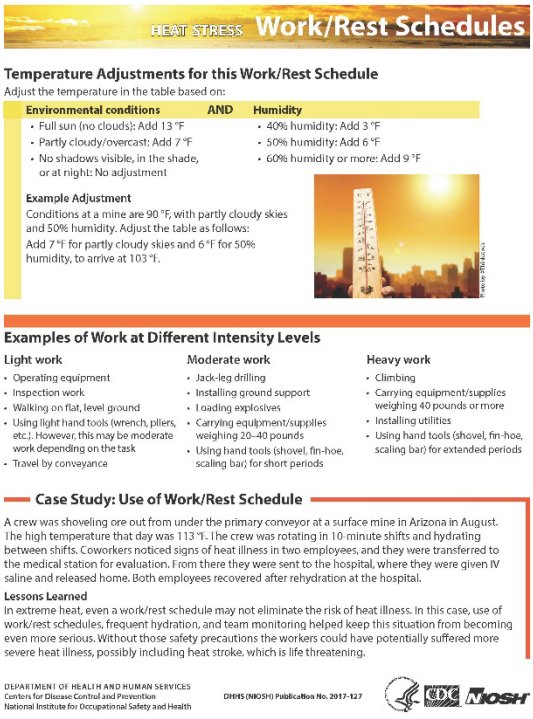
- Continuous work in the heat is not advisable--you must take rest breaks periodically to allow your body to cool down.
- A variety of work/rest schedules are available that can be adapted to your worksite. Relying on self-pacing alone may not be sufficient.

Example

A worker performing heavy work in 104 °F temperatures should work for 20 minutes and rest for 40 minutes.

Example

A worker performing moderate work at 108 °F should use extreme caution! The risk for heat injury is high in this situation.



HEAT STRESS **Work/Rest Schedules**

Temperature Adjustments for this Work/Rest Schedule

Adjust the temperature in the table based on:

Environmental conditions	AND	Humidity
• Full sun (no clouds): Add 13 °F • Partly cloudy/overcast: Add 7 °F • No shadows visible, in the shade, or at night: No adjustment		• 40% humidity: Add 3 °F • 50% humidity: Add 6 °F • 60% humidity or more: Add 9 °F

Example Adjustment

Conditions at a mine are 90 °F, with partly cloudy skies and 50% humidity. Adjust the table as follows:

Add 7 °F for partly cloudy skies and 6 °F for 50% humidity, to arrive at 103 °F.

Examples of Work at Different Intensity Levels

Light work

- Operating equipment
- Inspection work
- Walking on flat, level ground
- Using light hand tools (wrench, pliers, etc.). However, this may be moderate work depending on the task
- Travel by conveyance

Moderate work

- Jack-leg drilling
- Installing ground support
- Loading explosives
- Carrying equipment/supplies weighing 20–40 pounds
- Using hand tools (shovel, fin-hoe, scaling bar) for short periods

Heavy work

- Climbing
- Carrying equipment/supplies weighing 40 pounds or more
- Installing utilities
- Using hand tools (shovel, fin-hoe, scaling bar) for extended periods

Case Study: Use of Work/Rest Schedule

A crew was shoveling ore out from under the primary conveyor at a surface mine in Arizona in August. The high temperature that day was 113 °F. The crew was rotating in 10-minute shifts and hydrating between shifts. Coworkers noticed signs of heat illness in two employees, and they were transferred to the medical station for evaluation. From there they were sent to the hospital, where they were given IV saline and released home. Both employees recovered after rehydration at the hospital.

Lessons Learned

In extreme heat, even a work/rest schedule may not eliminate the risk of heat illness. In this case, use of work/rest schedules, frequent hydration, and team monitoring helped keep this situation from becoming even more serious. Without those safety precautions the workers could have potentially suffered more severe heat illness, possibly including heat stroke, which is life threatening.

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