



| <b>HEAT STRESS SAFETY PROGRAM</b> |                                       |  |
|-----------------------------------|---------------------------------------|--|
| <b>Issue Date: 7/1/17</b>         | <b>Issued By :<br/>EHS Department</b> | <b>Change Level: Original</b>                            |
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| <b>Review Date:</b>               | <b>Reviewed By:</b>                   | <b>Approved By: Heidi Page<br/>Asst. Director of EHS</b> |

## **Objective**

- Heat stress occurs when the body cannot cool itself enough to maintain a healthy temperature. Symptoms of heat stress include headache, dizziness, heat rash, fainting, nausea, weakness, irritability, heavy sweating, confusion, heat stroke and even death. A worsening of already existing medical conditions can occur when one is overcome with heat stress.

The Case Western Reserve University (CWRU) Heat Stress Prevention Program has been developed to provide workers with the training and equipment necessary to protect them from heat related exposures and illnesses and instruct employees on how to cope with heat stress should they become affected.

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## **1.0 Training**

- All employees of CWRU who are or may be exposed to potential heat related illnesses will receive training on the following:
  - Environmental and personal risk factors that cause heat related illnesses
  - CWRU's procedures for identifying, evaluating and Managing your exposure to environmental and personal risk factors for heat illness
  - The importance of frequent consumption of water, beginning with small quantities and going up to four cups of water per hour when under extreme conditions of work and heat
  - The importance of acclimatization to your environmental situation
  - The different types, common signs and symptoms of heat ailments
  - Why it is critical to immediately report any signs of heat illnesses being suffered by an employee to CWRU directly or through the employee's supervisor; This includes reporting the incident for yourself or your coworker. Be watchful of your coworkers at all times. If a supervisor is unavailable, call 911.
  - CWRU's procedures for responding to symptoms of possible heat illness including how emergency medical services will be made available if necessary
  - The correct processes for contacting emergency medical services and, if needed, procedures for transporting employees to a point where they can be cared for by an emergency medical health care provider
  - How to provide clear and precise directions to the worksite of the ill employee

## **2.0 Training Responsibilities**

- All supervisors will be provided with a copy of this program and training documents prior to the assignment of employees who will be working in environments where heat exposures may occur.

- Supervisors will be provided with procedures to follow so they will be able to effectively implement the applicable provisions of this program.
- Supervisors will be provided with detailed procedures, including emergency response actions to follow, should an employee exhibit symptoms consistent with possible heat illness.

### **3.0 Provision of Water**

- Employees shall have equal access to potable water which will be provided in sufficient quantity at the beginning of each work shift. One quart of water per hour will be given to all employees for drinking during the entire shift which equals a total of two gallons per employee, per eight-hour shift. Employees may begin the shift with smaller quantities of water only if effective procedures for replenishment of water during the shift have been implemented to provide employees one quart or more per hour. Employees should not wait until they are thirsty to drink water.

### **4.0 Access to Shade**

- Employees suffering from heat illness or those who believe they need a preventative recovery period shall be provided access to an area with shade that is either open to the air or equipped with ventilation or cooling for a period of no less than five minutes. *Such access to shade shall be permitted at all times.* Shade areas can include trees, buildings, canopies, lean-tos or other partial and/or temporary structures that are either ventilated or open to air movement. The interior of cars or trucks are not considered shade unless the vehicles are air conditioned or kept shielded from direct sunlight during the day.

### **5.0 Heat Stress Disorders**

- **Heat Rash – Prickly Heat**

- **Symptoms**

- Red blotches or bumps
- Extreme itchiness in areas persistently damp with sweat
- Prickling sensation on the skin when sweating occurs
- Rash may burn or sting

- **Treatment**

- Cool environment
- Cool shower
- Dry off thoroughly
- Calamine lotion or some topical steroids
- Loose fitting clothing
- Avoiding skin products containing petroleum jelly or mineral oil
- Heat rashes typically disappears in a few days after exposure. If the skin is not cleaned frequently enough, the rash may become infected.

- **Heat Cramps**

- **Symptoms**

- Loss of salt through excessive sweating
- Cramping in back, legs and arms
- Dehydration
- Muscle spasms

- **Treatment**

- Stretch and massage muscles
- Replace salt by drinking commercially available carbohydrate/electrolyte replacement fluids
- IV fluids may be needed if symptoms worsen or do not get better

- **Heat Exhaustion**

- Heat exhaustion occurs when the body can no longer supply flowing blood to vital organs and at the same time send blood to the skin to reduce body temperature. It can occur when a person

exercises or works in a hot environment and sweating is unable to rid excessive heat generated within the body. It takes 30 minutes to cool the body down once a worker becomes overheated and suffers heat exhaustion.

- **Symptoms**

- Weakness or fatigue
- Headache
- Finding it difficult to continue working
- Breathing difficulties
- Disorientation
- Nauseated or vomiting
- Feeling faint or actually fainting
- Clammy skin
- Pale or flushed face

- **Treatment**

- CALL 911

- **Help the victim cool off by:**

- Resting in a cool place
- Drinking cool water
- Remove unnecessary clothing or loosen clothing
- Have victim, if able, shower or sponge off with cool water
- Do not allow victim to have alcohol or caffeine
- Have the victim sit near or close to a fan

- **Heat Stroke**

- Heat stroke occurs when the body can no longer cool itself and body temperature rises to critical levels.

- **Symptoms**

- Confusion
- Irrational behavior
- Loss of consciousness
- Convulsions
- Lack of sweating
- Hot, dry skin
- Unusually high body temperature
- Agonizing headache
- Dizziness or light-headedness
- Victim may lapse into a coma

- **Treatment**

- CALL 911

- **Provide immediate, aggressive general cooling to the victim**

- Move person to an air conditioned environment or a cool, shaded area if possible
- Wrap victim in cool wet sheets and fan rapidly
- Do not give anything by mouth to an unconscious victim.
- Wait with person until EMS arrives.

## 6.0 Responsibilities

- Supervisors are responsible for performing the following:
  - Give workers frequent breaks in a cool area away from heat.
  - Adjust work practices as necessary when workers complain of heat stress.
  - Oversee heat stress training and acclimatization for new workers and for workers who have been off the job for a period of time.
  - Monitor the workplace to determine when hot conditions arise.
  - Increase air movement by using fans when/where possible.
  - Provide potable water in required quantities.
  - Determine whether workers are drinking enough water.
  - Make allowances for workers who must wear personal protective clothing (welders, etc.) and equipment that retains heat and restricts the evaporation of sweat.
  - Schedule hot jobs, routine maintenance and repair work located in hot areas for the cooler times of the day.
  - Make cooling devices (e.g., hard hat liners/bibs/neck bands) available to all workers to help them rid their bodies of excessive heat.
  - Use common sense and basic instinct.
  
- Workers are responsible for performing the following:
  - Follow instructions and training for controlling heat stress.
  - Be alert to symptoms in yourself and others.
  - Determine if any prescription medications you are required to take can increase heat stress.

- Wear light, loose-fitting clothing that permits the evaporation of sweat.
- Wear light colored garments that absorb less heat from the sun.
- Drink small amounts of water – approximately one cup every 15 minutes.
- Avoid beverages such as tea or coffee.
- Avoid eating hot, heavy meals.
- Do not take salt tablets unless prescribed by a physician.
- Review Attachment 1 for additional information.
- Use common sense and basic instinct.

## **7.0 Program Review**

- The safety director will periodically review this program for compliance with all applicable regulatory standards. Updates will be provided to all employees.

# Attachment One

## Heat Illness Prevention Guide for Workers

Awareness of heat illness symptoms can save your life or the life of your coworker. The following provides valuable information concerning heat-related illnesses and preventative measures.

- If you are coming back to work from an illness or an extended break or you are just starting a job working in the heat, it is important to be aware that you are more vulnerable to heat stress until your body has had time to adjust. Let your employer know you are not used to the heat. It takes about five to seven days for your body to adjust.
- It is vital that workers frequently drink plenty of water while they are exposed to the heat. An individual may produce as much as two to three gallons of sweat per day. In order to replenish that fluid, you should drink three to four cups of water every hour starting at the beginning of your shift.
- Taking breaks in cool shaded areas, thereby allowing time for recovery from the heat during the day is an effective, beneficial way to avoid heat-related illnesses.
- Avoid or limit the use of alcohol and caffeine during periods of extreme heat. Both dehydrate the body.
- If you or a coworker starts to feel symptoms such as nausea, dizziness, weakness or unusual fatigue, notify your supervisor immediately and rest in a cool sheltered area shielded from the sun. If symptoms persist or worsen, seek immediate medical attention.
- Whenever possible, wear clothing that provides protection from the sun but allows airflow to the body. Always protect your head and eyes when working outdoors.
- When working in the heat, pay extra attention to your coworkers and be sure you know how to call for medical attention.
- Take extra care of yourself from the sun/heat if you are considered to be at high risk. You may be at an increased risk if you are older, overweight, overexert yourself or have a chronic medical condition including diabetes, heart, lung or thyroid disease or high blood pressure. If you take medications, you should check with your physician to see if you are at increased risk due to the effects of these medications.
- Pace yourself. Start slowly and pick up the pace gradually.
- Remember these three simple words: ***Water, Rest, and Shade.***

## Attachment Two

### Heat Stress Index

**Table 3: Apparent temperature, Heat Stress Index (HSI)\***

| Relative Humidity % | Environmental Temperature °F |    |    |     |     |     |                       |     |     |     |
|---------------------|------------------------------|----|----|-----|-----|-----|-----------------------|-----|-----|-----|
|                     | 70                           | 75 | 80 | 85  | 90  | 95  | 100                   | 105 | 110 | 115 |
| 0%                  | 64                           | 69 | 73 | 78  | 83  | 87  | 91                    | 95  | 99  | 103 |
| 10%                 | 65                           | 70 | 75 | 80  | 85  | 90  | 95                    | 100 | 105 | 111 |
| 20%                 | 66                           | 72 | 77 | 82  | 87  | 93  | 99                    | 105 | 112 | 120 |
| 30%                 | 67                           | 73 | 78 | 84  | 90  | 96  | 104                   | 113 | 123 | 135 |
| 40%                 | 68                           | 74 | 79 | 86  | 93  | 101 | 110                   | 123 | 137 | 151 |
| 50%                 | 69                           | 75 | 81 | 88  | 96  | 107 | 120                   | 135 | 150 |     |
| 60%                 | 70                           | 76 | 82 | 90  | 100 | 114 | 132                   | 149 |     |     |
| 70%                 | 70                           | 77 | 85 | 93  | 106 | 124 | 144                   |     |     |     |
| 80%                 | 71                           | 78 | 86 | 97  | 113 | 136 | <b>Extreme Danger</b> |     |     |     |
| 90%                 | 71                           | 79 | 88 | 102 | 122 |     |                       |     |     |     |
| 100%                | 72                           | 80 | 91 | 108 |     |     |                       |     |     |     |

| Category        | Apparent temperature (°F) | Dangers                             |
|-----------------|---------------------------|-------------------------------------|
| Extreme danger  | Greater than 120          | Heat stroke imminent                |
| Danger          | 105-120                   | Heat exhaustion likely              |
| Extreme caution | 90-105                    | Heat cramps, exhaustion possible    |
| Caution         | 80-90                     | Exercise more fatiguing than normal |