

Section 17  
Brieser  
Construction  
SH&E  
Manual

June 4

2015

---

To define the requirements, responsibilities, and procedures necessary to reduce the risk of our employees suffering a Heat related illness.

Heat Illness  
Prevention

<b>BRIESER CONSTRUCTION GENERAL CONTRACTORS</b>		DATE:	PROCEDURE:
		6-12-12	Heat Stress
<b>CORPORATE SAFETY, HEALTH &amp; ENVIRONMENTAL MANUAL</b>		Revision:	PAGE:
		01	2
STANDARD OPERATING PROCEDURE:	<b>Heat Illness Prevention</b>		
CROSS REFERENCE:	<b>OSHA Heat Safety Fact Sheet, Publication #3422; English ACGIH, 2011. Heat Stress and Strain, in TLVs and BEIs</b>		

## **Heat Illness Prevention Brieser Construction**

### **Purpose**

Heat stress occurs when the heat load on the body exceeds the body's capacity to cool itself. The following information has been collected from the National Institute for Occupational Safety and Health (NIOSH). The purpose of this program is to provide guidance for protecting employees from hazards of high heat conditions and to provide information on engineering, administrative and PPE controls. Being uncomfortable is not the major problem with working in high temperatures and humidity's. Workers who are suddenly exposed to working in a hot environment face additional and generally avoidable hazards to their safety and health.

### **Scope**

To define the requirements, responsibilities, and procedures necessary to reduce the risk of our employees suffering a Heat related illness.

### **Responsibilities**

*The Program Administrator: Brieser Safety Manager*

This person is responsible for:

- Issuing and administering this program and making sure that it satisfies all applicable federal, state and local requirements.
- Ensuring that employees receive initial and refresher training on the use of this policy.
- Maintaining training records for all employees included in the training sessions
- Provide information to workers on signs of heat stress
- Provide means of preventing heat stress and other heat related health hazards

*Project Managers, Superintendents and Foremen*

These people are responsible for:

- Ensuring the Hot Work Day checklist is completed prior to work when outside temperatures are 80 degrees Fahrenheit or more.
- Providing training in the signs and symptoms of Heat related illnesses to workers on site
- Providing access to potable drinking water, located as close to the workers as possible.
- Providing shade to workers for breaks and if they need to recovery.

<b>BRIESER CONSTRUCTION GENERAL CONTRACTORS</b>		DATE:	PROCEDURE:
		6-12-12	Heat Stress
<b>CORPORATE SAFETY, HEALTH &amp; ENVIRONMENTAL MANUAL</b>		Revision:	PAGE:
		01	3
STANDARD OPERATING PROCEDURE:		<b>Heat Illness Prevention</b>	
CROSS REFERENCE:	<b>OSHA Heat Safety Fact Sheet, Publication #3422; English ACGIH, 2011. Heat Stress and Strain, in TLVs and BEIs</b>		

- Ensure that all supervision is trained in the prevention of heat related illnesses prior to supervising employees working in heat.
- Ensure that all supervision is trained in emergency procedures when an employee exhibits symptoms consistent with possible heat illness.

### *Employees*

- Understanding common signs and symptoms of heat illness
- Understanding proper precautions to prevent heat illness
- Understanding the importance of acclimatization
- Understanding the importance of drinking water frequently
- Report heat symptoms early

### **General**

OSHA does not have a specific standard that covers working in hot environments. Nonetheless, under the OSH Act, Brieser Construction Co. have a duty to protect workers from recognized serious hazards in the workplace, including heat-related hazards. This procedure will help worksite supervisors prepare and implement hot weather plans. It explains how to use the heat index to determine when extra precautions are needed at a worksite to protect workers from environmental contributions to heat-related illness. But first we must learn about Heat Illness disorders and the factors that contribute to them. Then this procedure will train and inform on what to do in varying heat indexes and when signs and symptoms arise in workers that are overcome by heat stresses.

### **Factors that may cause Heat-related Illnesses**

- **Environmental**
  - High temperature and humidity. Together this is called the Heat Index
  - Direct sun exposure (with no shade) or extreme heat
  - Limited air movement (no breeze or wind)
- **Job Specific**
  - Physical exertion
    - Type of work being performed
    - Duration of the task
  - Use of bulky protective clothing and equipment
    - Light vs. dark colors
    - Breathability of fabric
- **Personal**
  - Age
  - Weight/fitness
  - Drug/Alcohol use

<b>BRIESER CONSTRUCTION GENERAL CONTRACTORS</b>		DATE:	PROCEDURE:
		6-12-12	Heat Stress
<b>CORPORATE SAFETY, HEALTH &amp; ENVIRONMENTAL MANUAL</b>		Revision:	PAGE:
		01	4
STANDARD OPERATING PROCEDURE:		<b>Heat Illness Prevention</b>	
CROSS REFERENCE:	<b>OSHA Heat Safety Fact Sheet, Publication #3422; English ACGIH, 2011. Heat Stress and Strain, in TLVs and BEIs</b>		

- Prior heat-related illness
- Acclimatization or adjustment to the heat.

### **Recognition of common signs and symptoms and how to respond to Heat-related Emergencies**

If workers report or supervisors observe signs or symptoms of heat-related illness, stop activity immediately. Take action while waiting for help. HEAT STROKE IS A MEDICAL EMERGENCY. CALL 911 immediately if a worker shows any signs of heat stroke.

<b>BRIESER CONSTRUCTION GENERAL CONTRACTORS</b>		DATE:	PROCEDURE:
		<b>6-12-12</b>	<b>Heat Stress</b>
<b>CORPORATE SAFETY, HEALTH &amp; ENVIRONMENTAL MANUAL</b>		Revision:	PAGE:
		<b>01</b>	<b>5</b>
STANDARD OPERATING PROCEDURE:		<b>Heat Illness Prevention</b>	
CROSS REFERENCE:		<b>OSHA Heat Safety Fact Sheet, Publication #3422; English ACGIH, 2011. Heat Stress and Strain, in TLVs and BEIs</b>	

Illness	Symptoms	First Aid*
<b>Heat stroke</b>	<ul style="list-style-type: none"> <li>▪ Confusion</li> <li>▪ Fainting</li> <li>▪ Seizures</li> <li>▪ Excessive sweating or red, hot, dry skin</li> <li>▪ Very high body temperature</li> </ul>	<ul style="list-style-type: none"> <li>▪ Call 911</li>   <li style="text-align: center;">While waiting for help:</li>   <li>▪ Place worker in shady, cool area</li> <li>▪ Loosen clothing, remove outer clothing</li> <li>▪ Fan air on worker; cold packs in armpits</li> <li>▪ Wet worker with cool water; apply ice packs, cool compresses, or ice if available</li> <li>▪ Provide fluids (preferably water) as soon as possible</li> <li>▪ Stay with worker until help arrives</li> </ul>
<b>Heat exhaustion</b>	<ul style="list-style-type: none"> <li>▪ Cool, moist skin</li> <li>▪ Heavy sweating</li> <li>▪ Headache</li> <li>▪ Nausea or vomiting</li> <li>▪ Dizziness</li> <li>▪ Light headedness</li> <li>▪ Weakness</li> <li>▪ Thirst</li> <li>▪ Irritability</li> <li>▪ Fast heart beat</li> </ul>	<ul style="list-style-type: none"> <li>▪ Have worker sit or lie down in a cool, shady area</li> <li>▪ Give worker plenty of water or other cool beverages to drink</li> <li>▪ Cool worker with cold compresses/ice packs</li> <li>▪ Take to clinic or emergency room for medical evaluation or treatment if signs or symptoms worsen or do not improve within 60 minutes.</li> <li>▪ Do not return to work that day</li> </ul>
<b>Heat cramps</b>	<ul style="list-style-type: none"> <li>▪ Muscle spasms</li> <li>▪ Pain</li> <li>▪ Usually in abdomen, arms, or legs</li> </ul>	<ul style="list-style-type: none"> <li>▪ Have worker rest in shady, cool area</li> <li>▪ Worker should drink water or other cool beverages</li> <li>▪ Wait a few hours before allowing worker to return to strenuous work</li> <li>▪ Have worker seek medical attention if cramps don't go away</li> </ul>
<b>Heat rash</b>	<ul style="list-style-type: none"> <li>▪ Clusters of red bumps on skin</li> <li>▪ Often appears on neck, upper chest, folds of skin</li> </ul>	<ul style="list-style-type: none"> <li>▪ Try to work in a cooler, less humid environment when possible</li> <li>▪ Keep the affected area dry</li> </ul>
* Remember, if you are not a medical professional; use this information as a guide only to help workers in need.		

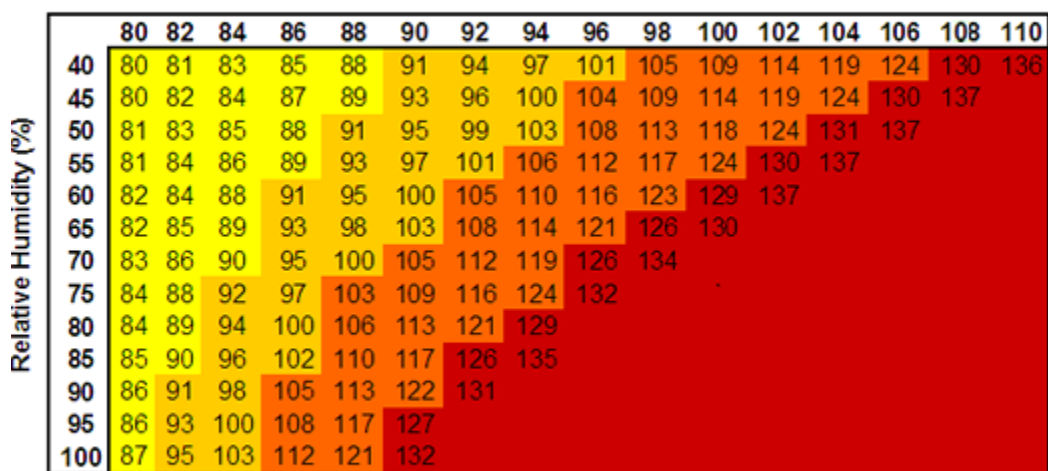
<b>BRIESER CONSTRUCTION GENERAL CONTRACTORS</b>		DATE:	PROCEDURE:
		6-12-12	Heat Stress
<b>CORPORATE SAFETY, HEALTH &amp; ENVIRONMENTAL MANUAL</b>		Revision:	PAGE:
		01	6
STANDARD OPERATING PROCEDURE:	<b>Heat Illness Prevention</b>		
CROSS REFERENCE:	<b>OSHA Heat Safety Fact Sheet, Publication #3422; English ACGIH, 2011. Heat Stress and Strain, in TLVs and BEIs</b>		

## Heat related illness prevention procedures

The U.S. National Oceanographic and Atmospheric Administration (NOAA) developed the heat index system. The heat index combines both air temperature and relative humidity into a single value that indicates the apparent temperature in degrees Fahrenheit, or how hot the weather will feel. The higher the heat index, the hotter the weather will feel, and the greater the risk that outdoor workers will experience heat-related illness.

### NOAA's National Weather Service

#### Heat Index Temperature (°F)



Likelihood of Heat Disorders with Prolonged Exposure or Strenuous Activity

■ Caution     
 ■ Extreme Caution     
 ■ Danger     
 ■ Extreme Danger

The heat index can be used to help determine the risk of heat-related illness for outdoor workers, what actions are needed to protect workers, and when those actions are triggered. Depending on the heat index value, the risk for heat-related illness can range from lower to very high to extreme. As the heat index value goes up, more preventive measures are needed to protect workers. Heat index values are divided into four bands associated with four risk levels.

Heat Index	Risk Level	Protective Measures
Less than 91°F	Lower (Caution)	Basic heat safety and planning
91°F to 103°F	Moderate	Implement precautions and heighten awareness
103°F to 115°F	High	Additional precautions to protect workers
Greater than 115°F	Very High to Extreme	Triggers even more aggressive protective measures

<b>BRIESER CONSTRUCTION GENERAL CONTRACTORS</b>		DATE:	PROCEDURE:
		6-12-12	Heat Stress
<b>CORPORATE SAFETY, HEALTH &amp; ENVIRONMENTAL MANUAL</b>		Revision:	PAGE:
		01	7
STANDARD OPERATING PROCEDURE:		<b>Heat Illness Prevention</b>	
CROSS REFERENCE:	<b>OSHA Heat Safety Fact Sheet, Publication #3422; English ACGIH, 2011. Heat Stress and Strain, in TLVs and BEIs</b>		

Use the protective measures described for each risk level to help you plan ahead, and schedule and train your workers so that everyone is prepared to work safely as the heat index rises.

### Summary of Risk Levels and Associated Protective Measures

The most critical actions Brieser supervision should take to help prevent heat-related illness at each risk level:

Heat Index	Risk Level	Protective Measures
<91°F	Lower (Caution)	<ul style="list-style-type: none"> <li>▪ Provide drinking water</li> <li>▪ Ensure that adequate medical services are available</li> <li>▪ Plan ahead for times when heat index is higher, including worker heat safety training</li> <li>▪ Encourage workers to wear sunscreen</li> </ul> <p><b>If workers must wear heavy protective clothing, perform strenuous activity or work in the direct sun, additional precautions are recommended to protect workers from heat-related illness.*</b></p>
91°F to 103°F	Moderate	<p>In addition to the steps listed above:</p> <ul style="list-style-type: none"> <li>▪ Remind workers to drink water often (about 4 cups/hour)**</li> <li>▪ Review heat-related illness topics with workers: how to recognize heat-related illness, how to prevent it, and what to do if someone gets sick</li> <li>▪ Schedule frequent breaks in cool, shaded area</li> <li>▪ Acclimatize workers</li> <li>▪ Set up buddy system/instruct supervisors to watch workers for signs of heat-related illness</li> </ul>

<b>BRIESER CONSTRUCTION GENERAL CONTRACTORS</b>		DATE:	PROCEDURE:
		6-12-12	Heat Stress
<b>CORPORATE SAFETY, HEALTH &amp; ENVIRONMENTAL MANUAL</b>		Revision:	PAGE:
		01	8
STANDARD OPERATING PROCEDURE:		<b>Heat Illness Prevention</b>	
CROSS REFERENCE:		<b>OSHA Heat Safety Fact Sheet, Publication #3422; English ACGIH, 2011. Heat Stress and Strain, in TLVs and BEIs</b>	

		<p><b>If workers must wear heavy protective clothing, perform strenuous activity or work in the direct sun, additional precautions are recommended to protect workers from heat-related illness.*</b></p> <ul style="list-style-type: none"> <li>▪ <b>Schedule activities at a time when the heat index is lower</b></li> <li>▪ <b>Develop work/rest schedules</b></li> <li>▪ <b>Monitor workers closely</b></li> </ul>
<b>103°F to 115°F</b>	High	<p>In addition to the steps listed above:</p> <ul style="list-style-type: none"> <li>▪ Alert workers of high risk conditions</li> <li>▪ Actively encourage workers to drink plenty of water (about 4 cups/hour)**</li> <li>▪ Limit physical exertion (e.g. use mechanical lifts)</li> <li>▪ Have a knowledgeable person at the worksite who is well-informed about heat-related illness and able to determine appropriate work/rest schedules</li> <li>▪ Establish and enforce work/rest schedules</li> <li>▪ Adjust work activities (e.g., reschedule work, pace/rotate jobs)</li> <li>▪ Use cooling techniques</li> <li>▪ Watch/communicate with workers at all times</li> </ul> <p><b>When possible, reschedule activities to a time when heat index is lower</b></p>
<b>&gt;115°F</b>	Very High to Extreme	<b>Reschedule non-essential activity for days with a reduced heat index or to a time when the heat index is lower</b>



<b>BRIESER CONSTRUCTION GENERAL CONTRACTORS</b>		DATE:	PROCEDURE:
		6-12-12	Heat Stress
<b>CORPORATE SAFETY, HEALTH &amp; ENVIRONMENTAL MANUAL</b>		Revision:	PAGE:
		01	9
STANDARD OPERATING PROCEDURE:		<b>Heat Illness Prevention</b>	
CROSS REFERENCE:		<b>OSHA Heat Safety Fact Sheet, Publication #3422; English ACGIH, 2011. Heat Stress and Strain, in TLVs and BEIs</b>	

		<p><b>Move essential work tasks to the coolest part of the work shift; consider earlier start times, split shifts, or evening and night shifts. Strenuous work tasks and those requiring the use of heavy or non-breathable clothing or impermeable chemical protective clothing should not be conducted when the heat index is at or above 115°F.</b></p> <p>If essential work must be done, in addition to the steps listed above:</p> <ul style="list-style-type: none"> <li>▪ Alert workers of extreme heat hazards</li> <li>▪ Establish water drinking schedule (about 4 cups/hour)**</li> <li>▪ Develop and enforce protective work/rest schedules</li> <li>▪ Conduct physiological monitoring (e.g., pulse, temperature, etc.)</li> <li>▪ Stop work if essential control methods are inadequate or unavailable.</li> </ul>
<p>*The heat index is a simple tool and a useful guide for employers making decisions about protecting workers in hot weather. It does not account for certain conditions that contribute additional risk, such as physical exertion. Consider taking the steps at the next highest risk level to protect workers from the added risks posed by:</p> <ul style="list-style-type: none"> <li>▪ Working in the direct sun (can add up to 15°F to the heat index value)</li> <li>▪ Wearing heavy clothing or protective gear</li> </ul> <p>**Under most circumstances, fluid intake should not exceed 6 cups per hour or 12 quarts per day. This makes it particularly important to reduce work rates, reschedule work, or enforce work/rest schedules.</p>		

## Drinking Water

<b>BRIESER CONSTRUCTION GENERAL CONTRACTORS</b>		DATE:	PROCEDURE:
		6-12-12	Heat Stress
<b>CORPORATE SAFETY, HEALTH &amp; ENVIRONMENTAL MANUAL</b>		Revision:	PAGE:
		01	10
STANDARD OPERATING PROCEDURE:		<b>Heat Illness Prevention</b>	
CROSS REFERENCE:	<b>OSHA Heat Safety Fact Sheet, Publication #3422; English ACGIH, 2011. Heat Stress and Strain, in TLVs and BEIs</b>		

Water should have a palatable (pleasant and odor-free) taste and water temperature should be 50°F to 60°F, if possible.

- Drink water throughout the day
- Guidelines recommend that outdoor workers drink 4 cups (8 ounces) of water every hour, even if they're not thirsty
- It is best to drink a small amount of water often, like 1 cup (2 ounces) every 15 minutes.
- Avoid alcohol and drinks with caffeine or sugar
- Generally, fluid intake should not exceed 6 cups per hour

All water shall be "potable water" setup at the worksite. Commercial bottled water is acceptable and if water from a plumbed source is used and transferred in portable drinking containers the following procedures must be followed to prepare the container for safe drinking.

To ensure employees of safe drinking water on the job site, certain steps need to be taken. The job site foreman should pick out 1 or 2 people to do the job of providing potable water to the job site.

Water coolers need to be cleaned on a daily bases. Items required for cleaning the coolers are

- A. Scrub brush that is marked for cleaning the outside of the containers only.
- B. Long handled scrub brush that is marked for cleaning the inside of the containers only.
- C. Test tube brush
- D. Powered baking soda (Arm & Hammer)
- E. Potable water
- F. Diluted bleach solution (200 PPM): Into (1) gallon of potable water, carefully mix one half ounce of household bleach (Clorox or any similar 5.25% sodium hypochlorite solution in water). Always use caution when mixing acids and water.

**To start the cleaning procedure:**

Step #1: Wash hands and arms thoroughly with soap and water. Rinse thoroughly and dry.

Step #2: Hose off the inside and outside of the container.

Step #3: Thoroughly scrub the outside of the container with a mild detergent such as dishwashing detergent. (Do not use this brush for any other purpose.) Thoroughly rinse the outside with potable water.

<b>BRIESER CONSTRUCTION GENERAL CONTRACTORS</b>		DATE:	PROCEDURE:
		6-12-12	Heat Stress
<b>CORPORATE SAFETY, HEALTH &amp; ENVIRONMENTAL MANUAL</b>		Revision:	PAGE:
		01	11
STANDARD OPERATING PROCEDURE:		<b>Heat Illness Prevention</b>	
CROSS REFERENCE:	<b>OSHA Heat Safety Fact Sheet, Publication #3422; English ACGIH, 2011. Heat Stress and Strain, in TLVs and BEIs</b>		

Step #4: Open the container and sprinkle 1 to 2 ounces of dry baking soda into the inside followed with enough potable water to make a loose paste mixture. Thoroughly scrub inside the container with a long handled brush. (Do not use this brush for any other purpose.)

Step #5: Thoroughly clean inside the spigot with the test tube brush. (Do not use this brush for any other purpose.)

Step #6: Thoroughly rinse the inside using potable water. Rinse spigot by opening.

Step #7: Disinfect inside the container with the bleach solution for no less than one minute. (Switch about a quart of the solution inside the container so that all surfaces are contacted. Let stand for one minute.) Allow a portion of the solution to drain through the spigot.

Step #8: Thoroughly rinse the inside with potable water.

Step #9: A diluted baking soda rinse can be used at this point to neutralize any excess chlorine taste in the water. Use about a teaspoon of baking soda in one gallon of water. Rinse again with potable water.

Fill the water cooler with fresh potable water and ice. Then use duct tape to seal the lid shut, date it and identify the contents. Be sure to have a receptacle for cup dispensing and also a receptacle for throwing away used cups. This should be done every day at the beginning of the shift and it should be refilled as needed throughout the day.

Water handlers shall maintain a high level of personal hygiene. This includes clean work clothes, skin, fingernails, hair and mustaches.

### **Work/Rest Schedules**

Rather than being exposed to heat for extended periods of time during the course of a job, workers should, wherever possible, be permitted to distribute the workload evenly over the day and incorporate work/rest cycles. Work/rest cycles give the body an opportunity to get rid of excess heat, slow down the production of internal body heat, slow down the heart rate, and provide greater blood flow to the skin.

For the best protection from heat-related illness, workers should spend the rest periods of the cycle in a cool place, for example in a lightly air conditioned room, trailer or vehicle, or if one is not available, then in full shade.

Rest periods do not necessarily mean that the workers are on break; these can be productive times. During the rest periods, workers may continue to perform mild or light work, such as completing

<b>BRIESER CONSTRUCTION GENERAL CONTRACTORS</b>		DATE:	PROCEDURE:
		6-12-12	Heat Stress
<b>CORPORATE SAFETY, HEALTH &amp; ENVIRONMENTAL MANUAL</b>		Revision:	PAGE:
		01	12
STANDARD OPERATING PROCEDURE:		<b>Heat Illness Prevention</b>	
CROSS REFERENCE:	<b>OSHA Heat Safety Fact Sheet, Publication #3422; English ACGIH, 2011. Heat Stress and Strain, in TLVs and BEIs</b>		

paperwork, sorting small parts, attending a meeting, or receiving training (e.g., instructions for upcoming work, or a tailgate safety talk).

Have a knowledgeable person at the worksite that is well-informed about heat-related illness and able to modify work activities and the work/rest schedule as needed. When evaluating an appropriate work/rest schedule:

Shorten work periods and increase rest periods:

- As temperature rises
- As humidity increases
- When sun gets stronger
- When there is no air movement
- When protective clothing or gear is worn
- For heavier work

Assign new and un-acclimatized workers lighter work and longer rest periods. Monitor these workers more closely.

Competent people for Brieser Construction may use the following table to help establish a Work/Rest schedule. This table should only be used for heat indexes up to 103°F.

**TABLE 1. APPROACH FOR SETTING WORK/REST SCHEDULES FOR WORKERS WEARING NORMAL WORK CLOTHING<sup>1</sup>**

Adjusted Temperature* (calculated)	Light Work	Moderate Work	Heavy Work
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 <sup>2</sup>
96	Normal	Normal	45/15
97	Normal	Normal	40/20
98	Normal	Normal	35/25
99	Normal	Normal	35/25

<b>BRIESER CONSTRUCTION GENERAL CONTRACTORS</b>		DATE:	PROCEDURE:
		<b>6-12-12</b>	<b>Heat Stress</b>
<b>CORPORATE SAFETY, HEALTH &amp; ENVIRONMENTAL MANUAL</b>		Revision:	PAGE:
		<b>01</b>	<b>13</b>
STANDARD OPERATING PROCEDURE:		<b>Heat Illness Prevention</b>	
CROSS REFERENCE:		<b>OSHA Heat Safety Fact Sheet, Publication #3422; English ACGIH, 2011. Heat Stress and Strain, in TLVs and BEIs</b>	

100	Normal	45/15 <sup>2</sup>	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 <sup>2</sup>	20/40	Caution <sup>3</sup>
107	40/20	15/45	Caution <sup>3</sup>
108	35/25	Caution <sup>3</sup>	Caution <sup>3</sup>
109	30/30	Caution <sup>3</sup>	Caution <sup>3</sup>
110	15/45	Caution <sup>3</sup>	Caution <sup>3</sup>
111	Caution <sup>3</sup>	Caution <sup>3</sup>	Caution <sup>3</sup>
112	Caution <sup>3</sup>	Caution <sup>3</sup>	Caution <sup>3</sup>

NOTES:

1. This table is based on American Conference of Governmental Industrial Hygienists limits for heat-acclimatized adults in effect at the time the document was published (1993). Assumptions include physically fit, well-rested, and fully hydrated workers under the age of 40; adequate water intake; 30% relative humidity; natural ventilation with perceptible air movement; and air temperature readings in Fahrenheit, taken in the shade, no sunshine or no shadows visible.
2. 45/15 minutes = 45 minutes work and 15 minutes rest during each hour.
3. Indicates very high levels of heat stress. Consider rescheduling activities for a time when the risk of heat illness is lower.
4. \*Note: Adjust the temperature reading as follows before going to the temperature column in the table:

Full sun (no clouds)	add 13°
Partly cloudy/overcast	add 7°
No shadows visible/work is in the shade or at night	no adjustment
For relative humidity of:	
10%	subtract 8°
20%	subtract 4°
30%	no adjustment
40%	add 3°
50%	add 6°

<b>BRIESER CONSTRUCTION GENERAL CONTRACTORS</b>		DATE:	PROCEDURE:
		<b>6-12-12</b>	<b>Heat Stress</b>
<b>CORPORATE SAFETY, HEALTH &amp; ENVIRONMENTAL MANUAL</b>		Revision:	PAGE:
		<b>01</b>	<b>14</b>
STANDARD OPERATING PROCEDURE:		<b>Heat Illness Prevention</b>	
CROSS REFERENCE:	<b>OSHA Heat Safety Fact Sheet, Publication #3422; English ACGIH, 2011. Heat Stress and Strain, in TLVs and BEIs</b>		

60%	add 9°
-----	--------

For example, if the temperature is 91°, it is dusk, the relative humidity is 40%, and heavy work is to be done, such as moving heavy materials with a wheelbarrow:

Start with 91° and add 3° because the humidity is 40% [91°+3°=94°]. Go to 94° in the table; under these conditions, it would be reasonable to follow a normal work schedule.

## Estimating Work Rates or Loads

Examples of work activities that are considered light, moderate, heavy, and very heavy:

Work Rate Category	Example Motions	Example Tasks
Rest	<ul style="list-style-type: none"> <li>▪ Sitting</li> </ul>	<ul style="list-style-type: none"> <li>▪ Attending a meeting (seated)</li> <li>▪ Reading instructions, completing paperwork</li> <li>▪ Watching a training video</li> </ul>
Light	<ul style="list-style-type: none"> <li>▪ Sitting with light manual work with hands and arms</li> <li>▪ Driving</li> <li>▪ Standing with some light arm work and occasional walking</li> <li>▪ Casual walking (2 miles per hour)</li> <li>▪ Lifting 10 pounds fewer than eight times per minute, or 25 pounds less than four times per minute</li> </ul>	<ul style="list-style-type: none"> <li>▪ Using small bench tools or small power tools</li> <li>▪ Inspecting and sorting produce</li> <li>▪ Sorting light materials</li> <li>▪ Assembling small parts</li> <li>▪ Driving vehicle on roads</li> <li>▪ Nailing</li> </ul>
Moderate	<ul style="list-style-type: none"> <li>▪ Sustained moderate hand and arm work</li> <li>▪ Moderate arm and leg work</li> <li>▪ Moderate arm and trunk work</li> <li>▪ Moderate pushing and pulling</li> <li>▪ Walking at a moderate speed</li> <li>▪ Lifting 10 pounds 10 times per minute, or 25 pounds six times per minute</li> </ul>	<ul style="list-style-type: none"> <li>▪ Picking fruits and vegetables (bending, squatting)</li> <li>▪ Painting with a brush</li> <li>▪ Pushing or pulling lightweight carts or wheelbarrows</li> <li>▪ Off road operation of trucks, tractors or construction equipment</li> <li>▪ Operating an air hammer</li> </ul>

<b>BRIESER CONSTRUCTION GENERAL CONTRACTORS</b>		DATE:	PROCEDURE:
		6-12-12	Heat Stress
<b>CORPORATE SAFETY, HEALTH &amp; ENVIRONMENTAL MANUAL</b>		Revision:	PAGE:
		01	15
STANDARD OPERATING PROCEDURE:		<b>Heat Illness Prevention</b>	
CROSS REFERENCE:	<b>OSHA Heat Safety Fact Sheet, Publication #3422; English ACGIH, 2011. Heat Stress and Strain, in TLVs and BEIs</b>		

- Weeding or hoeing

---

Heavy	<ul style="list-style-type: none"> <li>▪ Intense arm and trunk work</li> <li>▪ Carrying, shoveling, manual sawing</li> <li>▪ Pushing or pulling heavy loads</li> <li>▪ Walking at a fast pace (4 miles per hour)</li> <li>▪ Lifting 10 pounds 14 times per minute, or 25 pounds 10 times per minute</li> </ul>	<ul style="list-style-type: none"> <li>▪ Transferring heavy materials, shoveling</li> <li>▪ Sledgehammer work</li> <li>▪ Hand mowing, digging</li> <li>▪ Concrete block laying</li> <li>▪ Pushing or pulling loaded hand carts or wheelbarrows</li> </ul>
-------	--	---

---

Very Heavy	<ul style="list-style-type: none"> <li>▪ Very intense activity at fast to maximum pace</li> <li>▪ Jogging, running or walking faster than 4 miles per hour</li> <li>▪ Lifting 10 pounds more than 18 times per minute, or 25 pounds more than 13 times per minute</li> </ul>	<ul style="list-style-type: none"> <li>▪ Heavy shoveling or digging</li> <li>▪ Ax work</li> <li>▪ Climbing stairs, ramps or ladders</li> </ul>
------------	--	--

If the Heat Index calculation is 103°F or more, the Brieser Safety Department must be notified to setup a Work/Rest schedule based on WBGT (Wet Bulb Globe Temperature) readings. The WBGT monitor offers a useful, first-order index of the environmental contribution to heat stress. It is influenced by air temperature, radiant heat, and humidity. A Table will be used that is prepared by the American Conference of Governmental Industrial Hygienist to establish a Work/Rest Schedule. All Heat indexes below 1-03°F will simply follow the sites competent person’s personal recommendation for work breaks.

### **Acclimatizing Workers**

Individual susceptibility to heat-related illness can vary widely between workers. Workers become gradually acclimatized when exposed to hot conditions for several weeks. Physical changes in blood vessels and in sweating occur to dissipate heat more effectively. When the heat index is high, special precautions are needed to protect un-acclimatized workers while they adjust, particularly on the first few days of the job.

Allow workers to get used to hot environments by gradually increasing exposure over at least a 5-day work period. Begin with 50% of the normal workload and time spent in the hot environment

<b>BRIESER CONSTRUCTION GENERAL CONTRACTORS</b>		DATE:	PROCEDURE:
		6-12-12	Heat Stress
<b>CORPORATE SAFETY, HEALTH &amp; ENVIRONMENTAL MANUAL</b>		Revision:	PAGE:
		01	16
STANDARD OPERATING PROCEDURE:		<b>Heat Illness Prevention</b>	
CROSS REFERENCE:	<b>OSHA Heat Safety Fact Sheet, Publication #3422; English ACGIH, 2011. Heat Stress and Strain, in TLVs and BEIs</b>		

and then gradually build up to 100% by the fifth day. New workers and those returning from an absence of two weeks or more should have a 5-day minimum adjustment period. While a significant amount of acclimatization occurs rapidly in that first week, full acclimatization may take a little longer. Some workers require up to two or three weeks to fully acclimatize.

Keep in mind that acclimatization can occur naturally for outdoor workers in a hot climate as the weather changes. However, implementing acclimatization activities is essential for new workers, workers who have been out sick or on vacation, and all workers during a heat wave. Be extra-careful with these workers and recognize immediately the symptoms of possible heat-related illness.

### **Monitoring Workers who are at risk of Heat-related Illness**

- Heart rate. Count the radial pulse during a 30-second period as early as possible in the rest period.
  - If the heart rate exceeds 110 beats per minute at the beginning of the rest period, shorten the next work cycle by one-third and keep the rest period the same.
  - If the heart rate still exceeds 110 beats per minute at the next rest period, shorten the following work cycle by one-third.
- Oral temperature. Use a clinical thermometer (3 minutes under the tongue) or similar device to measure the oral temperature at the end of the work period (before drinking).
  - If oral temperature exceeds 99.6°F (37.6°C), shorten the next work cycle by one-third without changing the rest period.
  - If oral temperature still exceeds 99.6°F (37.6°C) at the beginning of the next rest period, shorten the following work cycle by one-third.
  - Do not permit a worker to wear a semi-permeable or impermeable garment when his/her oral temperature exceeds 100.6°F (38.1°C).

### **Training**

For both employees and supervisory personnel, heat stress training is the key to good work practices. If not all employees understand the reasons for using appropriate work practices to prevent heat stress, the chances of this program succeeding are greatly reduced. A good heat stress-training program for employees should cover at least the following components:

- Knowledge of the hazards of heat stress.
- Recognition of predisposed factors, danger signs, and symptoms.
- Awareness of first aid procedures for and potential health effects of heat stress.
- Employee responsibilities in avoiding heat stress. Dangers of the use of drugs, including therapeutic ones, and alcohol in a hot work environment.



<b>BRIESER CONSTRUCTION GENERAL CONTRACTORS</b>		DATE:	PROCEDURE:
		<b>6-12-12</b>	<b>Heat Stress</b>
<b>CORPORATE SAFETY, HEALTH &amp; ENVIRONMENTAL MANUAL</b>		Revision:	PAGE:
		<b>01</b>	<b>17</b>
STANDARD OPERATING PROCEDURE:		<b>Heat Illness Prevention</b>	
CROSS REFERENCE:	<b>OSHA Heat Safety Fact Sheet, Publication #3422; English ACGIH, 2011. Heat Stress and Strain, in TLVs and BEIs</b>		

- Proper use of protective clothing and equipment.
- Purpose and coverage of environmental and medical surveillance programs and the advantages of worker participation in such a program.
- The importance of maintaining body fluids at normal levels.
- The benefits and factors of acclimatization.
- The components of the heat stress program.

**BRIESER CONSTRUCTION  
SAFETY & HEALTH MANUAL  
SECTION 17  
HEAT ILLNESS PREVENTION  
SUB-SECTION  
TRAINING**



## ATTENDANCE ROSTER

### Brieser Construction

EMPLOYEE NAME (Print or Type)	EMPLOYEE SIGNATURE	TRADE	JOB TITLE
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			
17.			
18.			
19.			
20.			

<b>ROUTING</b>	<b>PERSONEL MANAGER</b>	Add to Training Database
	<b>SCAN</b>	SAFETY/HEAT ILLNESS PREVENTION/TRAINING/MMDDYYTRAINING CERTIFICATION

**Training Session 1**  
**Health Effects of Heat**  
**(15 minutes)**

**1. Introduce the topic by saying something like this:**

- Today we are going to talk about how heat can affect you and what symptoms you should watch out for. Heat exhaustion can often affect you before you even realize it, so it's important to be very aware of the signs.

**2. Ask the crew questions**

- Just like we can't let a car engine overheat or it shuts down, we don't want your body to get too hot. Let's start by talking about heat — where does the heat come from that causes our bodies to overheat?
  - Hot weather
  - Humid weather
  - Sun—you absorb more heat if you are in the sun
  - Heat our bodies generate when we are physically active and doing hard work

**3. Working outdoors, especially in hot and humid weather, being in the sun, and doing hard physical work is something we have to take seriously.**

- What are some of the signs you may notice if your body is getting too hot?
  - Headache, dizziness, or fainting
  - Weakness and wet skin
  - Irritability or confusion
  - Thirst, nausea, or vomiting

**4. These are the early signs that you need to cool off, rest, and drink water to let your body recover. If you don't, you could develop some of the more serious effects**

**5. Review the following points**

- Working outdoors is hard work and you will feel sweaty and tired
- Workers need to drink water, take shade breaks, and rest to prevent heat problems
- Once rested and feeling better, you can go back to work, but you should still drink water frequently and take another break when you need to. If you don't feel better, talk to your supervisor.

**6. Review the following points**

- If you are working in the heat, especially if you're not drinking enough water or taking enough breaks, you may get heat exhaustion
  - You may get a headache, experience dizziness, or faint
  - You could get weak or have wet skin
  - You may become irritable or confused
  - You may be thirsty, nauseous, or vomit
  - If you start to feel confused, or if you vomit or become faint, you may be having a more serious response
- Workers may also develop what is called heat stroke
  - At this point you may be confused, unable to think clearly, pass out, collapse, or have seizures
  - You may stop sweating. Sweating is the main way our bodies cool off!

**Training Session 2**  
**How to Respond to Symptoms**  
**(15 minutes)**

1. Introduce the topic by saying something like this:
  - Last time, we talked about the symptoms you may get if you have heat exhaustion or the very serious condition called heat stroke. Today we are going to talk about what you should do if you or your co-workers are having these symptoms.
2. Ask the crew these questions
  - Let's say there is a worker in our crew who has signs of heat exhaustion: she is very sweaty, weak, and has a headache. What do you think you should do?
    - Notify the supervisor. She needs medical help.
    - 2. Move the person to a cooler place to rest in the shade. Don't leave her alone.
    - 3. Little by little, give her water.
    - 4. Loosen her clothing.
    - 5. Help cool the person. Fan her, put ice packs on her groin and underarms, or soak her clothing with cool water.
3. Add the following points
  - Be prepared to describe the symptoms and know how to describe our location to the emergency personnel so they can find us quickly.
  - Don't wait because heat exhaustion can quickly become more dangerous.
  - Be alert to unusual behavior: if your co-workers seem confused, or are sitting by themselves or walking around aimlessly, ask them if they're okay. If they seem to be acting strangely, they may have heat stroke. Contact the supervisor.
4. For the next activity pick one of the workers to be a person who has heat exhaustion, and explain: (Make sure the crew acts out what they would do, instead of just telling you. Add any points they miss from the bulleted answers below.)
  - Now to review how we would respond, you are going to practice what you should do if someone is having symptoms of heat exhaustion. Let's say you are working with (fill in name) and you notice he is very sweaty and confused, and he looks disoriented and can't seem to concentrate on his work. Show me what you would do.
    - Call the supervisor and asks for medical help.
    - Move the person to a cooler place to rest in the shade. Stay with the person.
    - Give the person water as long as he/she is not losing consciousness or vomiting.
    - Loosen the person's clothing.
    - Help cool the person. Fan the person, put ice packs on the person's groin and underarms, or soak the person's clothing with cool water.
5. To conclude, ask if anyone has questions, then close by saying:
  - Now we have learned how we would respond if someone developed heat exhaustion, but the best strategy is always prevention. Next time, we are going to talk about how to prevent heat exhaustion.

**Training Session 3**  
**Preventing Heat Exhaustion**  
**(15 minutes)**

1. Introduce the topic by saying something like this:
  - While heat exhaustion is very dangerous, it is also preventable. Today we are going to review what we have learned so far and talk about what we can do to protect ourselves from heat. There are three simple words: water, rest, shade. Heat illness can be prevented: Drink water often, even if you aren't thirsty; rest in the shade to cool down; report heat symptoms early; know what to do in an emergency.

2. Show the crew the drawing of Rogelio on this page. Read the following story out loud:

- Rogelio is a new member of a crew that is picking melons in the fields. On his second day, he works hard for long periods without a break. In the early afternoon his co-worker, Julio, looks over and sees that Rogelio is sweating profusely and is acting strangely. Julio asks Rogelio what's going on, and Rogelio says he has a slight headache and feels dizzy. Julio realizes Rogelio needs help and calls the crew leader. Together they give him water and help him sit down. Julio stays with him while the crew leader calls 911 for medical help. Rogelio recovers, but can't work for a few days. Later, he says he had wanted to show he could work hard, and he didn't drink much water because he didn't feel thirsty.



3. Ask the crew these questions:
  - How do you know Rogelio may be suffering from heat exhaustion?
    - He is sweating, weak, has a headache, and feels dizzy
  - What went well in this case to address heat exhaustion?
    - Julio called the crew leader
    - They gave Rogelio water
    - They called 911
    - They helped him sit down to rest
    - Julio was watching out for his co-worker. He stayed with Rogelio while the crew leader made the call
  - What went wrong?
    - Rogelio wasn't used to working in the heat. He should have had less intense work until he got used to working in the heat.
    - They had not made sure Rogelio got adequate breaks.
    - Rogelio hadn't drunk water. You shouldn't wait until you are thirsty to drink.
    - They didn't take Rogelio to shade.
    - Rogelio wanted to prove he could work hard — he didn't report symptoms as soon as he felt them.
  - So what can we learn from this – what are the important steps to prevent heat exhaustion?

**Training Session 3**  
**Preventing Heat Exhaustion**  
**(15 minutes)**

- Rogelio wasn't used to working in the heat. He should have had less intense work until he got used to working in the heat.
  - They had not made sure Rogelio got adequate breaks.
  - Rogelio hadn't drunk water. You shouldn't wait until you are thirsty to drink.
  - They didn't take Rogelio to shade.
  - Rogelio wanted to prove he could work hard – he didn't report symptoms as soon as he felt them.
4. Add the following points
- It is recommended that each person drink water often
    - It's better to drink small amounts frequently, as opposed to larger amounts less often.
    - Drink even if you don't feel thirsty.
    - Avoid drinks like sodas or coffee that have caffeine, or alcoholic drinks these drinks dehydrate you and can make it more dangerous to work in the heat. Also avoid sports drinks as these contain too much sugar.
    - People worry that if they drink a lot of water, they'll have to go to the bathroom more often. In fact, you'll mostly sweat it off.
    - When you're not at work, still drink plenty of water to help your body recover from the workday.
    - During a heat wave, it is recommended to provide more frequent breaks.
    - Pair off and watch your co-worker for signs of heat exhaustion. Remind your buddy to drink water or take a break. Talk to your buddy during the work shift to make sure everything is okay. Sometimes people with heat exhaustion get disoriented and think they are okay. If you suspect a problem, keep checking on your co-worker or tell a supervisor.
    - Sometimes people say they are more protected by dark-colored, heavier clothing. This will only make you hotter. Wear light-colored lightweight cotton clothing.
5. Ask the crew this question:
- What suggestions do you have for what we can do on this job site to prevent heat exhaustion?
6. To conclude, ask if anyone has questions and remind workers of the following four points:
- Drink water often
  - Rest in the shade
  - Report heat symptoms early
  - Know what to do in an emergency.



# HOT WORK DAY CHECKLIST

To be performed when outside temperatures are above 80°F

## WATER

Is there plenty of fresh, cool drinking water located as close as possible to the workers?

Is there a plan for refilling water coolers throughout the day?

Is the Brieser policy being followed for providing clean drinking water?

## SHADE AND REST

Is a shade structure available at all times (regardless of weather) for workers to rest and cool down?

Is the shade structure up and ready when the weather forecast is 85°F or higher?

Do you have a plan in place for checking the weather forecast?

## TRAINING

Have workers been trained to recognize and prevent heat illness BEFORE they start working outdoors?

Can workers identify symptoms of heat illness?

Is there a special plan in place to allow workers to get used to the heat?

## EMERGENCY PLAN

Does everyone know who to notify if there is an emergency?

Can workers explain their location if they need to call an ambulance?

Does everyone know who will provide first aid?

## WORKER REMINDERS

Have workers been reminded to:

Drink water frequently?

Rest in the shade for at least 15 minutes as needed

Look out for one another and immediately report any symptoms?