

Manual Section 7	Issue Date 06/05/04	Revision Date 01/01/24	Policy Number LLCP-076
	Heat Stress Prevention		

Purpose

The purpose of this program is to ensure that all employees, working in outdoor places of employment or in other areas when environmental risk factors for heat illness are present, are protected from heat illness and are knowledgeable of heat illness symptoms, methods to prevent illness, and procedures to follow if symptoms occur.

Scope

All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries, Valvemax, Discovery Industries, Inc.; hereafter identified as “Company”.

HEALTH HAZARDS

Heat stress occurs when the total heat load on the body exceeds the body’s capacity to cool itself. The progressive effects are:

- Heat Rash: Red skin rash & discomfort
- Heat Cramps: Cramps in arms, legs or abdomen
- Heat Exhaustion: Headache, nausea, and clammy, moist skin
- Heat Collapse: Fainting
- Heat Stroke: Unconsciousness and hot, dry skin. High body temperature.

WORK PRACTICE GUIDELINES

These guidelines set forth shall be used as a “Guide” ONLY. Individuals will all act differently in in-climate weather. Many factors influence how an individual acclimates to the weather. Some of these influences are as follows:

- Age
- Weight
- Degree of physical fitness
- Degree of acclimatization
- Metabolism
- Use of alcohol, drugs or diuretic products such as caffeine, ginseng, etc.
- Medical Conditions such as hypertension, diabetes, etc.

Supervisors shall take these personal factors into consideration before assigning a task where there is a possibility of a heat related illness occurring.

Employees shall have access to potable drinking water. Where it is not plumbed or otherwise continuously supplied, it shall be provided in sufficient quantity throughout the work shift.

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WORK PRACTICE RECOMMENDATIONS

Category	Ambient Temp (°F) Wearing regular clothing ¹	Ambient Temp (°F) Wearing PPE ²	Action Steps
I	<90	<70	None required
II	90 - 100	70 - 90	Drink plenty of water. 1 cup of water is recommended every 20 min. Supervisors will make sure that potable water is accessible at all times. Take periodic breaks in shaded areas provided. Supervision shall monitor workers for signs of heat stress.
III	100 - 110	90 - 100	All requirements for II, plus at least one of the following as appropriate for the work in progress: More frequent rest breaks in cooler area. Shading, if working in the sun. Salt / Electrolyte replacement consideration. Reflective barriers for radiant heat. Temporary insulation Spot cooling (fan or air conditioning) Personal cooling devices (cooling vests or vortex tubes) Supplied air respirators.
IV	>110	>100	All requirements for II, plus: Job-specific work/rest schedule (see Work/Rest Guide below. One of the options listed for III.

Guidelines for Work/Rest Schedules

Work Load with Regular Work Clothes for Acclimatized Workers (Temp = °F)			Work/Rest Schedule in Each Hour	
Light	Moderate	Heavy	Work	Rest
95°	90°	85°	Continuous	
100°	95°	90°	75%	25%
105°	100°	95°	50%	50%
110°	105°	100°	25%	75%

Work Load with PPE for Acclimatized Workers (Temp = °F)			Work/Rest Schedule in Each Hour	
Light	Moderate	Heavy	Work	Rest
85°	80°	75°	Continuous	
90°	85°	80°	75%	25%
95°	90°	85°	50%	50%
100°	95°	90°	25%	75%

HEAT STRESS PREVENTION & PPE

The use of PPE (e.g., rain suits and chemical protective suits) may interfere with the body's ability to cool itself. Use the Safety Standards and IH Guidelines to determine when this type of PPE is required. PPE means rain suits, impermeable coveralls, over-suiting with disposable coveralls, welding leathers, etc.

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When using PPE that will interfere with the body’s ability to cool itself, Personal Core Body Temperature Monitors as well as cooling devices may be necessary. These devices are not fail-safe and require continual monitoring.

When Personal Core Body Temperature Monitor Patches are worn and the core the body temperature increases to a level associated with an elevated risk of heat exhaustion or heat stroke, the patch changes to a highly noticeable color to alert the employee to take measures to reduce his or her body temperature. Once the individual has cooled to a non-risk temperature, the patch will return to the original color. At this point, all users should refrain from any further stress or strain. However, the patch will continue to change color again when the body temperature increases to an elevated level.

The patch has Heat-sensitive chemistry that changes color to indicate the rise and fall of core body temperature. When an employee’s temperature reaches elevated levels, the Core Body Temperature Monitor begins to change from black to yellow.



In order to accurately measure core temperature, the monitoring patch must be placed on an area with blood vessels close to the surface of the skin. These areas include:

- Neck artery
- Bicep just before the inner elbow
- Inner forearm just before inner elbow
- Wrist just before the hand



During work activities that have a high probability of heat related illnesses, such as, working in high humidity, around radiant heat sources or in areas with poor circulation, a sight specific work plan should be developed to prevent Heat Stress. This plan can be in the form of a JSEA but must be thorough enough to identify heat related precautions for the task, methods to prevent heat stress to personnel and methods of monitoring personnel for heat related illnesses.

Physical factors that contribute to heat related illness should be taken into consideration before performing a task. The most common physical factors that can contribute to heat related illness are type of work, level of physical activity and duration, and clothing color, weight and breathability.

Employees shall be trained in this program at hire. Supervisors shall be trained in techniques used to identify heat related illnesses, prior to supervising employees, and ways to correct or control those illnesses. They shall also have the proper means to prevent illnesses whenever there is danger due to heat.

In the event an employee has come down with a heat related illness, the Supervisor shall proceed with training following the HSE incident/illness plan and flowchart.

Preventive Recovery Periods

The purpose of the recovery period is prevention of heat illness. The supervisor is required to provide access to shade for employees who believe they need a preventive recovery period from the effects of heat and for any who exhibit indications of heat illness.

Access to shade must be allowed at all times, and employees must be allowed to remain in the shade for at least five minutes.

The purpose of the preventive recovery period is to reduce heat stress on the employee. The preventive recovery period is not a substitute for medical treatment.

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Emergency Procedures

If an employee has any symptoms of heat illness, first-aid procedures should be initiated without delay. Common early signs and symptoms of heat illness include headache, muscle cramps, and unusual fatigue. However, progression to more serious illness can be rapid, and can include loss of consciousness, seizures, mental confusion, unusual behavior, nausea or vomiting, hot dry skin, or unusually profuse sweating.

Any employee exhibiting any of the above mentioned symptoms requires immediate attention. Even the initial symptoms may indicate serious heat exposure. If medical personnel are not immediately available onsite and serious heat illness is suspected, emergency medical personnel should be immediately contacted and on-site first aid undertaken. No employee with symptoms of possible serious heat illness should be left unattended or sent home without medical assessment and authorization.

All Supervisors and employees must be trained to recognize and respond to symptoms of possible heat illness.

If any employee exhibits signs or symptoms of heat stroke emergency medical services must be contacted. Supervisors must be able to provide clear and precise directions to the worksite and should carry cell phones or other means of communication to ensure that emergency services can be called.

OTHER PRECAUTIONS/REQUIREMENTS

The following factors will reduce workers' heat tolerance:

- Medications such as Diuretics
- Blood Pressure medication
- Anti-histamines
- Aspirin
- Antidepressants
- Neuroleptics.

Workers' heat tolerance can be increased by gradually increasing the period of time spent in high heat environments (acclimatization). Employees shall be given appropriate time to acclimate to high heat environments.

AIR MONITORING REQUIREMENTS

Temperature measurements may be required to confirm correct procedures.

SPECIFIC TRAINING REQUIREMENTS

Personnel should receive heat stress awareness training annually, prior to the summer season.