ALERT NO.: SA 7-11 **07/11/11**

SAFETY ALERT

Heat Stress

Heat stress occurs when the total heat load on the body exceeds the body's capacity to cool itself. Heat stress can result in fatigue, skin rashes, and decreased mental alertness which can be a contributor to poor judgment and accidents. Over-exposure to heat can cause cramps, nausea, headache, fainting, and, in extreme cases, even cause death. Heat stroke is a very serious medical condition in which the body's system of regulating its temperature has failed. It often results in death, unless treated immediately.

HYDRATION -- Drink water early, drink water often throughout the day -- and drink even if you do not "feel" thirsty. Taking in small amounts of water at regular intervals (about 1 cup every 20 minutes) is much more effective in fighting heat stress than gulping down large amounts of liquid after longer work intervals. Also, avoid diuretics like cola, tea and coffee as these tend to cause us to lose fluid. **Proper hydration is 1 Liter of water be drank for every hour of strenous activity.** (Ex: 8 hours of work=8 Liters of water per day)

KNOW THE SYMPTOMS --Be familiar with the signs your body is giving you. Don't risk a heat related injury to complete the job . Stop, take a break, hydrate yourself. Keep an eye on co-workers also. If you notice anyone or yourself presenting signs of heat stress, stop immediately, get to shade and hydrate yourself.

- Red blotchy skin
- Muscle cramps
- Impaired Motor Preformance
- Excessive Sweating
- Headaches
- Nausea

PREVENTION -- Take frequent breaks, stay hydrated. Remember 4 to 1 ratio. Four bottles of water for every one bottle of electrolyte replacement (ie. Gatorade, powerade). Avoid any type of caffeine products and be aware of medications you may take, prescription and over the counter. Some medication can reduce the capacity of the body to tolerate the heat.

Prevention of heat stress is an individual responsibility. Only through careful consideration of this serious hazard and taking definitive steps to manage the potentially dangerous effects of heat stress can we safely perform work in these days of summer.

Refer to the GIS Heat Stress Prevention Policy Below

	Heat Stress Prevention	Issue Date 06/05/04 Revision Date 05/11/04

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.

WORK PRACTICE RECOMMENDATIONS

Category	**Ambient Temp (^{o}F) Wearing regular clothing[1]**	**Ambient Temp (^{o}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. 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.

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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.

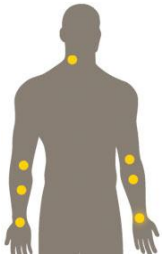
When using PPE that will interfere with the body's ability to cool itself, Personal Core Body Temperature Monitors as well as cooling devices may be necessary. These devices are not fail-safe and require continual monitoring.2

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



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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 WP/SEA 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.

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.

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).

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.