

**HANFORD MISSION SUPPORT CONTRACT**

# **Heat Stress Program**

**MSC-PRAC-30505**

**Revision 0**

**Effective Date: January 15, 2010**

**Topic: Safety and Health**

## Heat Stress Program

### **PURPOSE**

This practice identifies a key aspect of the Mission Support Alliance (MSA) Construction Industrial Hygiene (IH) program, and establishes the requirements for evaluating and controlling personnel heat stress, and preventing heat-related illness during work in high temperature environments.

### **SCOPE**

This practice includes the following major sections:

- General Requirements
- Employee Awareness and Training
- Identification and Evaluation of Potential Heat Stress Conditions
- Applying Heat Stress Control Strategies
- Medical Aspects of Heat Stress Control

These requirements are consistent with the requirements published in the Mission Support Contract (MSC) Safety and Health virtual manual.

### **APPLICATION**

This practice applies to MSA construction personnel.

### **GENERAL REQUIREMENTS**

Records generated during the performance of this activity are to be included in the Construction Work Package and will be managed in accordance with [MSC-PRAC-30374](#), *Construction Work Package* and [MSC-PRAC-30376](#), *Construction Document Control*.

The current edition of the American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value (TLV) guidelines are followed for monitoring environmental conditions (such as the use of a wet bulb globe thermometer [WBGT]) and implementing work-rest regimens except as noted below.

### **Use of Alternate Heat Stress Control Methods**

Projects may select alternate heat stress control methods that deviate from the ACGIH heat stress TLVs provided that the following conditions are met:

- The area construction manager and the area safety manager approve the alternate control methods.
- The alternate program is adequately documented.

## Heat Stress Program

- Employees are adequately trained to the alternate heat stress control methods with emphasis on heat stress prevention and recognition.
- Employees are monitored, and heat stress incidence rates are tracked to demonstrate no adverse effects from the alternate program.

**NOTE:** *MSA project safety reviews/approves subcontractor alternate methods.*

### **EMPLOYEE AWARENESS AND TRAINING**

Supervision performs following:

- Ensures that employees who are working in or supervising work in hot environments are trained in heat stress recognition, prevention, and control. Training includes:
  - Identification of heat stress hazards and potential health effects
  - Predisposing factors and relevant signs and symptoms of heat injury and illness
  - Information on water intake replacement
  - Heat stress control strategies such as work practices and engineering controls, proper acclimatization, and proper use of heat stress personal protective equipment
  - The potential for therapeutic drugs, over-the-counter medications, or social drugs (including alcohol) to increase the risk of heat injury or illness by reducing heat tolerance
  - Worksite-specific heat stress prevention information in regular prejob briefings. Communicate temperature readings, environmental data, and any heat stress information to affected employees
- Keeps records of training

As requested or appropriate, project safety participates in prejob briefings or other processes, communicating the hazards associated with heat stress conditions at the worksite and the control methods to be used, and contributes to training in heat-stress related topics.

## Heat Stress Program

Employees perform the following:

- Participate in heat stress prevention activities, including training and prejob briefings.
- Being aware of means to avoid heat stress, such as adequate water consumption.
- Recognize the signs and symptoms of heat stress.
- Inform supervisors and take appropriate action, such as immediately exiting the work area if signs and symptoms of heat stress develop.

**IDENTIFICATION  
AND  
EVALUATION  
OF POTENTIAL  
HEAT STRESS  
CONDITIONS**

Supervision evaluates whether the potential for heat stress exists by considering the following risk factors:

- High temperature
- Humidity
- Sources of radiant heat, such as steam pipes, boilers, heated vessels
- The use of protective clothing (coveralls, Tyvek<sup>®</sup> coveralls, semi-permeable or impermeable chemical protective clothing) that can impair the body's ability to regulate heat
- Work requiring moderate to heavy physical labor
- Outdoor operations conducted in hot weather, such as construction, asbestos removal, or hazardous waste activities
- Direct physical contact with hot objects
- Work performed in greenhouses or other enclosures during conditions that could result in heat buildup or other environments with minimal air movement

## Heat Stress Program

Supervision includes heat stress hazards in the Job Safety Analysis (JSA), Automated Job Hazard Analysis (AJHA), or other hazard identification process when heat stress conditions or hot environments are anticipated. Supervision obtains support from project safety to evaluate hazards and recommend controls.

**NOTE:** *If weather and environmental conditions change because of the time elapsed between preparation of the JSA or work planning documents and conduct of the work, reevaluate the potential for heat stress at or around the time the work is to be conducted.*

Project safety performs the following:

- Participates in walkdowns, design reviews, work planning processes, and worksite surveillances to identify working conditions that may create heat stress.
- Reviews and participates in the job hazard analysis or similar hazard analysis process to determine the potential for employee exposure to heat stress.
- Conducts or interprets workplace environmental measurements where heat stress potential exists.
- Determines the permissible heat exposure TLV for the workloads.

### **APPLYING HEAT STRESS CONTROL STRATEGIES**

The area construction manager ensures that a supervisor who knows the early signs/symptoms of heat illness and who can enforce the permissible work/rest regimen and other established controls oversees work performed in a hot environment.

Supervision performs/ensures the following:

- Workers allow appropriate time acclimatization before working in a hot environment. Consult project safety for guidance on establishing acclimatization regimens for the activity.

## Heat Stress Program

- Water/fluids are provided for workers as needed and whenever work/rest regimens or other controls are instituted to prevent heat stress.
  - Encourage workers to consume adequate quantities of water. Recommended intake is 240 milliliters or 8 ounces (1 cup) of cool water 10–16 °C (50–60 °F) every 15-20 minutes.
  - Ensure water is readily accessible to employees in the work area, if feasible. Encourage workers to drink fluids before entering the work area.
  - If project safety determines that heat stress conditions exist in a radiological contamination area, provide fluids in accordance with the site radiological control requirements.

**NOTE:** *Salt tablets are not recommended.*

- Engineering and administrative controls, when feasible, are provided and applied to reduce the potential for exposure to heat stress conditions.
  - Examples of engineering controls include insulation or shielding of hot equipment and surfaces, local exhaust ventilation, water-misting devices, and forced ventilation of a work area.
  - Examples of administrative controls include scheduling work for cooler parts of the day, rotating tasks among workers, and applying work/rest regimens.

**NOTE:** *When temperatures are at or in excess of 34 °C (95 °F), forced air ventilation should not be used unless the ventilation air is cooled.*

- Work, workload, and work/rest regimen schedules are adjusted when required.
- Worksite-specific heat stress surveillances are conducted.
- Cool-down areas adjacent to the hot environment are provided.

## Heat Stress Program

- Personal protective equipment, cooling devices, and accessory equipment, (such as insulated gloves, reflective clothing, cool ties, ice vests, vortex suits), are provided as recommended by project safety.

**NOTE:** *The cooling medium in some ice vests/cool ties (especially gel) has caused or contributed to skin discomfort in sensitive individuals. Frequent and careful inspection of such devices is recommended.*

- Jobs that require the use of respiratory protection, radiological, or chemical protective clothing are planned with consideration of the stressors that protective clothing can contribute to the overall heat stress potential.
- Implementation of personal monitoring strategies when appropriate and as recommended by project safety.

Project safety assists supervision/management by performing the following:

- Establishing heat stress exposure guidelines.
- Recommending appropriate personal and environmental monitoring methodologies, engineering controls, administrative controls, personal protective equipment, and work/rest regimens (schedules) to prevent heat stress.
- Collecting, interpreting, and documenting worksite-specific personal heat stress or environmental monitoring data as appropriate.
- Determining if workers need cooling devices while performing tasks, based on temperature, workload category, and protective clothing requirements.
- Purchasing, issuing, and using cooling devices or other protective equipment as requested.

# Heat Stress Program

## MEDICAL ASPECTS OF HEAT STRESS CONTROL

Supervision performs the following:

- Recognizes work conditions that may require employees to be medically evaluated to work in a hot environment.
- Ensures first aid and emergency procedures for response to heat stress related illnesses are established and communicated to employees.

The occupational medical provider performs the following:

- Assesses employee's capacity to work in a hot environment and to wear prescribed personal protective equipment in hot environments, as requested by line management.
- Provides medical treatment and intervention strategies, as appropriate.

Project safety investigates heat stress disorder cases and provides results to construction management.

## FORMS

*Job Safety Analysis/Activity Hazard Analysis (K-2 JSA/AHA),*  
[A-6004-280 \(S-NW-059<sup>©</sup>\)](#)

## RECORDS IDENTIFICATION

**Records Capture Table**

<b>Name of Document</b>	<b>Submittal Responsibility</b>	<b>Retention Responsibility</b>
Construction Work Package	Construction Engineer	Construction Document Control
<i>Job Safety Analysis/Activity Hazard Analysis (K-2 JSA/AHA),</i> <a href="#">A-6004-280 (S-NW-059<sup>©</sup>)</a>	Construction Engineer	Construction Document Control

## REFERENCES

*American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values*

[MSC-PRAC-30374](#), *Construction Work Package*  
[MSC-PRAC-30376](#), *Construction Document Control*