

POLICY

E & B Oilfield Services Inc. has implemented this plan to ensure no employees are exposed to heat stress illnesses (HRI) in the workplace, and will evaluate if heat will be a problem on a particular day based on temperature and humidity levels. If required, E & B Oilfield Services Inc. will implement adequate controls, methods, or procedures to reduce the risk of HRI and prevent heat illness in outdoor places of employment.

REFERENCES

- §1910.148 – Heat Injury and Illness Prevention

RESPONSIBILITIES

Employers

- Adjust work practices as necessary when an employee complains of heat stress.
- First try to control exposure through engineering controls.
- Oversee heat stress training and acclimatization for new employees and for employees who have been off the job for a while.
- Provide employee education and training, including periodic safety meetings on heat stress during hot weather or during work in hot environments.
- Monitor the workplace to determine when hot conditions arise.
- Determine whether the employee is drinking enough water.
- Determine a proper work or rest regimen for employees.
- Arrange first aid training for employees.
- When working in a manufacturing plant, for instance, a contractor may wish to adopt the plant's heat stress program if it exists.

Safety Committee

- Assist in ensuring heat stress management is followed when necessary.
- Assist in training employees to recognize and control workplace hazards.
- Monitor the workplace for hazards.
- Encourage employees to report hazards.
- Implement appropriate controls.
- Ensure corrective action is taken promptly.

Employees

- Follow instructions and training for controlling heat stress.
- Be alert to symptoms in yourself and others.
- Avoid consumption of alcohol, illegal drugs and excessive caffeine.
- Check if prescription medications can increase heat stress.
- Get adequate rest and sleep.
- Drink small amounts of water regularly (up to four (4) cups per hour) to maintain fluid levels and avoid dehydration.

TRAINING

Before working at or above the initial heat trigger, the employer will ensure that each employee receives training on, and understands, the following:

- Heat stress hazards.
- Heat-related injuries and illnesses.
- Risk factors for heat-related injury or illness, including the contributions of physical exertion, clothing, personal protective equipment (PPE), a lack of acclimatization, and personal risk factors (e.g., age, health, alcohol consumption, and use of certain medications).
- Signs and symptoms of heat-related illness and which ones require immediate emergency action.
- The importance of removing that may impair cooling during rest breaks.
- Importance of taking rest breaks to prevent heat-related illness or injury, and that rest breaks are paid.
- Importance of drinking water to prevent heat-related illness or injury.
- The location of break areas.
- The location of employer-provided water.
- The importance of employees reporting any signs and symptoms of heat-related illness they may experience, and those they observe in co-employees.
- All policies and procedures that are applicable to the employee's duties, as indicated in the work site's Heat Injury and Illness Prevention Plan (HIIPP).
- The identity of the heat safety coordinator(s).
- The requirements of this standard.
- How the employee can access the work site's HIIPP.
- Employees have a right to the protections required by this standard (e.g., rest breaks, water) and employers are prohibited from discharging or in any manner discriminating against any employee for exercising those rights.
- If the employer is required to place warning signs for excessively high heat areas, they will train employees in the procedures to follow when working in these areas.

Supervisor Training

The employer will ensure that each supervisor will be trained in preventing heat-related illnesses prior to supervising employees and will be responsible for managing employees performing any work at or above the initial heat trigger. Furthermore, the Company will guarantee that each heat safety coordinator receives training on and understands the following:

- The policies and procedures developed to comply with the applicable requirements, including the policies and procedures for monitoring heat conditions.
- The procedures the supervisor or heat safety coordinator will follow if an employee exhibits signs and symptoms of heat-related illness.

Annual Refresher Training

The employer will ensure that each employee receives annual training on, and understands, the subjects addressed in the initial training. The employer will also ensure that each supervisor and heat safety coordinator additionally receive annual training on, and understands, the topics addressed regarding supervisor training. For employees who perform work outdoors, the employer will conduct the annual refresher training before or at the start of heat season.

Supplemental Training

The employer will ensure that each employee promptly receives, and understands, additional training whenever:

- Changes occur that affect the employee's exposure to heat at work (e.g., new job tasks).
- The employer changes the policies or procedures that are applicable to the employee's duties
- There is an indication that the employee has not retained the necessary understanding.
- A heat-related injury or illness occurs at the work site that results in death, days away from work, medical treatment beyond first aid, or loss of consciousness.

PROCEDURES

The risks of working in hot construction environments can be reduced if employees and management cooperate to help control heat stress.

Management

- Monitor work conditions and ensure that the program and procedures are documented and implemented throughout the day.
- Give the employee frequent breaks in a cool shaded area away from heat (cooling period no less than five (5) minutes). The area will not be so cool that it causes cold shock – around 75° F is ideal. The provided shaded area will be either open air or provided with ventilation for cooling.
- Increase air movement by using fans where possible. This encourages body cooling through the evaporation of sweat.
- Provide unlimited amounts of conveniently located cool (50°-60°F) potable drinking water.
- Allow sufficient time for an employee to become acclimated. A properly designed and applied acclimatization program decreases the risk of heat-related illnesses. Under this program, an employee is exposed to work in a hot environment for progressively longer periods. NIOSH recommends that for an employee who have had previous experience in hot jobs, the regimen will be: 50% exposure on day one (1); 60% on day two (2); 80% on day three (3) and 100% on day four (4).
- For new employee in a hot environment, the regimen will be 20% on day one (1), with a 20% increase in exposure each additional day.
- Make room for employees who will wear personal protective clothing and equipment that retains heat and restricts the evaporation of sweat.
- Schedule hot jobs for the cooler part of the day; schedule routine maintenance and repair work in hot areas for the cooler seasons of the year.
- Consider the use of cooling vests containing ice packs or ice water to help rid bodies of excess heat.

Employees

- Wear light, loose clothing that permits the evaporation of sweat.
- Drink plenty of water or sports beverages to keep hydrated. Do not wait until you are thirsty. Drink approximately one (1) cup of water per hour.
- Avoid beverages such as tea, coffee, or beer that make you pass urine more frequently.

Where PPE Will Be Worn:

- Use the lightest weight clothing and respirators available.
- Wear light-colored garments that absorb less heat from the sun.
- Use PPE that allows sweat to evaporate.
- Avoid eating hot, heavy meals. They tend to increase internal body temperature by redirecting blood flow away from the skin to the digestive system.
- Do not take salt tablets unless a physician prescribes them. Natural body salts lost through sweating are easily replaced by a normal diet.

DEFINITIONS

Acclimatization: The process where the body adapts to heat over time, reducing the risk of heat stress and illness.

Ambient temperature: The temperature of the surrounding air, also known as "air temperature" or "dry bulb temperature."

Cooling PPE: Gear worn to protect against heat injury or illness.

Heat index: A measure combining ambient temperature and humidity, as defined by the National Weather Service.

High heat trigger: A heat index of 90°F or a wet bulb globe temperature matching the NIOSH Recommended Exposure Limit (REL).

Indoor/indoors: An area with a ceiling or covering and walls, doors, windows, or barriers that limit airflow.

Initial heat trigger: A heat index of 80°F or a wet bulb globe temperature matching the NIOSH Recommended Alert Limit (RAL).

Outdoor/outdoors: Any area not considered indoors; this includes vehicles operated outside.

Radiant heat: Heat transferred through electromagnetic waves from sources like the sun, hot objects, or fire.

RAL: NIOSH-recommended heat stress limits for employees not yet acclimatized.

REL: NIOSH-recommended heat stress limits for acclimatized employees.

Shade: Blocking direct sunlight to prevent objects from casting shadows in the shaded area.

Signs and symptoms of a heat emergency: Severe heat illness signs needing emergency response, such as fainting, high body temperature, dizziness, nausea, headache, confusion, bizarre behavior, staggering, vomiting, irrational actions, disorientation, convulsions, and an elevated heart rate after rest.

Signs and symptoms of heat-related illness: Indicators of heat illness like headache, nausea, weakness, dizziness, high body temperature, muscle cramps, and pain or spasms.

Vapor-impermeable clothing: Clothing that prevents sweat from evaporating, such as encapsulating suits and chemical-resistant suits.

Vehicle: Any motorized means of transporting people or goods, like cars, trucks, and vans.

Wet bulb globe temperature (WBGT): A measure considering ambient temperature, humidity, radiant heat, and air movement.

Work area: A place within a work site where employees work.

Work site: A physical location, fixed or mobile, where the employer's work is performed.

SCOPE AND APPLICATION

This standard is applicable to all employers, unless stated otherwise in this section. However, this standard does not apply to the following:

- Activities where there is no reasonable expectation of exposure to heat at or above the initial trigger level.
- Employee exposures to heat at or above the initial trigger level for 15 minutes or less within any 60-minute period.
- This includes firefighting organizations, emergency response teams, emergency medical services, and technical search and rescue operations. Emergency response activities already covered under specific OSHA standards (29 CFR 1910.120, 29 CFR 1910.146, 29 CFR 1910.156, 29 CFR 1915 Subpart P, 29 CFR 1926.65, and 29 CFR 1926.1211) are also exempt.
- Work in indoor areas or vehicles with consistent air conditioning maintaining temperatures below 80°F.
- Telework conducted from home or another remote location of the employee's choosing.
- Indoor work involving only sedentary activities such as sitting, occasional standing and walking, and occasional lifting of objects weighing less than ten (10) lb.

HIIPP

The employer will create and implement a site-specific HIIPP. The plan will include:

- A list of covered work activities.
- Policies and procedures to meet the standard requirements.
- The heat metric (e.g., heat index or wet bulb globe temperature) the employer will monitor.
- If employees wear vapor-impermeable clothing, the employer will:
 - Evaluate heat stress hazards.
 - Implement protective policies based on reliable sources.
 - Document these policies and evaluations in the HIIPP.
- For employers with more than ten (10) employees, the HIIPP will be written.
- The employer will designate heat safety coordinators to manage and monitor the HIIPP.
- The coordinator(s) will have the authority to ensure compliance and will be identified in the written plan.
- The employer will seek input from non-managerial employees and their representatives in developing and implementing the HIIPP.
- The employer will review the HIIPP's effectiveness after any severe heat-related illness or injury, and at least annually.

- Necessary updates will be made, with input from non-managerial employees and their representatives.
- The HIIPP will be readily available to all employees at the work site.
- The HIIPP will be available in a language understood by all employees, supervisors, and heat safety coordinators.

Emergency Medical Response (EMS)

- E & B Oilfield Services Inc. will have a written plan to provide EMS.
- E & B Oilfield Services Inc. will ensure the availability of a suitable number of appropriately trained individuals to render first aid. E & B Oilfield Services Inc. will inform all employees of the procedure to follow in case of injury or illness.
- When there is any sign of a heat related illness, the proper first aid will be implemented to the affected employee.
 - Taking the affected employee to a shady or air-conditioned area.
 - Lay the employee down and elevate the legs and feet slightly.
 - Remove tight or heavy clothing.
 - Provide them with a drink of something cool, that does not contain caffeine or alcohol.
 - Monitor closely and contact emergency medical response if needed.

Emergency Transportation

Before employees are sent to a work site, E & B Oilfield Services Inc. will ensure that arrangements are in place to transport injured or ill employee from the work site to the nearest health care facility. If ambulance service is not readily available to the work site or travel conditions are not normal, E & B Oilfield Services Inc. will provide proper equipment for the prompt transportation of the injured or ill employee to a physician or hospital where emergency care is provided. E & B Oilfield Services Inc. will ensure that other transportation is available that:

- Is suitable, considering the distance to be traveled and the type of acute illnesses or injuries that may occur at the work site
- Protects occupants from the weather
- Have systems that allow the occupants to communicate with the health care facility to which the injured or ill employee is being taken
- Can accommodate a stretcher and an accompanying person if required to

Emergency Communication

E & B Oilfield Services Inc. will provide an effective communication system for contacting hospitals or other emergency medical facilities, physicians, ambulance, or fire services. In the case of remote job sites, provisions for CB-type, two-way radio communications will be implemented. The telephone numbers of the following emergency services in the area will be posted near the job telephone or otherwise made available to the employee where no job site telephone exists:

- A physician and at least one (1) alternate if available
- Hospitals
- Ambulance services
- Fire-protection services

Response Time of EMS

E & B Oilfield Services Inc. considers it important to know how long it would take a trained medical employee to reach an injured employee after an accident.

Things E & B Oilfield Services Inc. will consider include:

- How long would it take our employee to reach a phone to call 911? Are phones conveniently located in the work area or would they have to go to an office to call?
- How far are the emergency medical services from our work site?
- How would emergency medical services get to our work site? They may only be 100 ft. away, but if it is across a limited access road, they may have gone five (5) miles in one (1) direction to turn around and come back.
- How bad is traffic? Are back-ups common in the area at certain times?
- How available are emergency medical services? If there is only one (1) ambulance and one (1) medical team, they may be out on another emergency. It will take a long time for someone to respond to our call.
- How large and complex is our worksite? How difficult would it be for emergency services to find the place where the injured employee is? We may need to arrange for the emergency services to go to a central location (such as a reception area) and receive directions from there.
- E & B Oilfield Services Inc. will contact the local emergency medical service within the proximity of the work site and verify their response to the above inquiries and adjust our plan accordingly.
- Our work site supervisor is responsible for inspecting and maintaining first aid kits.

New or temporary employee will be trained in these elements of E & B Oilfield Services Inc.'s emergency medical response plan as part of their safety orientation before they start work.

RECOGNIZING AND AVOIDING HEAT STRESS

Heat Stress in Construction

Construction operations involving heavy physical work in hot, humid environments can put considerable heat stress on an employee. Hot and humid conditions can occur either indoors or outdoors.

Asbestos removal, work with hazardous wastes, and other operations that require employee to wear semi-permeable or impermeable protective clothing can contribute significantly to heat stress. Heat stress causes the body's core temperature to rise

When the Body's Core Temperature Rises

The human body functions best within a narrow range of internal temperature. This "core" temperature varies from 96.8° F to 100.4° F. A construction employee performing heavy work in a hot environment builds up body heat. To get rid of excess heat and keep internal temperature below 100.4° F, the body uses two (2) cooling mechanisms:

The heart rate increases to move blood – and heat – from heart, lungs, and other vital organs to the skin.

Sweating increases to help cool blood and body. Evaporation of sweat is the most important way the body gets rid of excess heat.

When the body's cooling mechanisms work well, core temperature drops or stabilizes at a safe level (around 98.6° F). But when too much sweat is lost through heavy labor or working under hot, humid conditions, the body does not have enough water left to cool itself. The result is dehydration.

Core temperature rises above 100.4° F. A series of heat-related illnesses, or heat stress disorders, can then develop.

Recognizing Heat Stress Disorders

Heat Rash

Heat rash (also known as prickly heat) – is the most common problem in hot work environments.

Symptoms include:

- Red blotches and extreme itchiness in areas persistently damp with sweat
- Prickling sensation on the skin where sweating occurs

Treatment

Cool shaded environment, cool shower, thorough drying. In most cases, heat rashes disappear a few days after heat exposure ceases. If the skin is not cleaned frequently enough, the rash may become infected.

Heat Cramps

Under extreme conditions, such as removing asbestos from hot water pipes for several hours in heavy protective gear, the body may lose salt through excessive sweating. This can lead to heat cramps. These are spasms in larger muscles – usually back, leg and arm. Cramping creates hard painful lumps within the muscles.

Treatment

Shade, stretch and massage muscles. E & B Oilfield Services Inc. will provide methods for salt replacement (e.g., commercially available carbohydrate/electrolyte replacement fluids for drinking) during physical activities in hot climates where such activities will bring on heat-related illnesses.

Heat Exhaustion

Heat exhaustion occurs when the body can no longer keep blood flowing to supply vital organs and send blood to the skin to reduce body temperature at the same time. Signs and symptoms of heat exhaustion include:

- Weakness
- Difficulty continuing work
- Headache
- Breathing difficulty
- Nausea or vomiting
- Feeling faint or actually fainting

Employees fainting from heat exhaustion while operating machinery, vehicles, or equipment can injure themselves and others.

Treatment

Heat exhaustion casualties respond quickly to prompt first aid. If not treated promptly, however, heat exhaustion can lead to heat stroke—a medical emergency.

- Call 911
- Help the casualty to cool off by: Resting in a cool shaded place
- Drinking cool water
- Removing unnecessary clothing
- Loosening clothing

Showering or sponging with cool water takes at least 30 minutes to cool the body down once an employee becomes overheated and suffers heat exhaustion.

Heat Stroke

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

Warning: Heat stroke requires immediate medical attention.

The primary signs and symptoms of heat stroke are:

- Confusion
- Irrational behavior
- Loss of consciousness
- Convulsions
- Lack of sweating
- Hot, dry skin
- Abnormally high body temperature — for example, 104° F

Treatment

For any employee showing signs or symptoms of heat stroke, call 911.

- Provide immediate, aggressive, general cooling in a shaded area
- Immerse casualty in tub of cool water
- Place in cool shower
- Spray with cool water from a hose
- Wrap casualty in cool, wet sheets and fan rapidly
- Transport casualty to hospital
- Do not give anything by mouth to an unconscious casualty

Warning: Heat stroke can be fatal even after first aid is administered. Anyone suspected of suffering from heat stroke will not be sent home or left unattended unless that action has been approved by a physician. If in doubt as to what type of heat-related disorder the employee is suffering from, call for medical assistance.

Heat Stress Risk Assessment Factors

Factors that will be considered in assessing heat stress include:

- Personal risk factors
- Environmental factors
- Job factors

Personal Risk Factors

It is difficult to predict just who will be affected by heat stress and when, because individual susceptibility varies. There are, however, certain physical conditions that can reduce the body's natural ability to withstand high temperatures:

E & B Oilfield Services Inc. will ensure that before assigning a task where heat related illness may occur, supervisors will consider the following most common personal factors that contribute to heat related illness.

- Weight: Employees who are overweight are less efficient at losing heat.
- Poor physical condition: Being physically fit aids your ability to cope with the increased demands that heat places on your body.

- Previous heat illnesses: Employees are more sensitive to heat if they have experienced a previous heat-related illness.
- Age: As the body ages, its sweat glands become less efficient. Employees over the age of 40 may therefore have trouble with hot environments. Acclimatization to the heat and physical fitness can offset some age-related problems.

In addition, E & B Oilfield Services Inc. will consider physical work factors when designing work procedures in hot thermal stressor environments to prevent heat-related illnesses.

Heart disease or high blood pressure: In order to pump blood to the skin and cool the body, the heart rate increases. This can cause stress on the heart.

Recent illness: Employee with recent illnesses involving diarrhea, vomiting, or fever have an increased risk of dehydration and heat stress because their bodies have lost salt and water.

Alcohol consumption: Alcohol consumption during the previous 24 hours leads to dehydration and increased risk of heat stress.

Medication: Certain drugs may cause heat intolerance by reducing sweating or increasing urination. Employees who work in a hot environment will consult their physician or pharmacist before taking medications.

Lack of acclimatization: When exposed to heat for a few days, the body will adapt and become more efficient in dealing with raised environmental temperatures. This process is called acclimatization. Acclimatization usually takes six (6) to seven (7) days.

Benefits include:

- Lower pulse rate and more stable blood pressure
- More efficient sweating (causing better evaporative cooling)
- Improved ability to maintain normal body temperatures

Acclimatization may be lost in as little as three (3) days away from work. Employees returning to work after a holiday or long weekend – and their supervisors – will understand this. Employees will be allowed to gradually re-acclimatize to work conditions.

Environmental Factors

Environmental factors such as ambient air temperature, air movement/circulation, radiant heat sources and relative humidity can all affect an individual's response to heat. The body exchanges heat with its surroundings mainly through radiation and sweat evaporation. The rate of evaporation is influenced by humidity and air movement. As such, E & B Oilfield Services Inc. will place into effect specific measures/procedures to control the effects of these environmental factors that are considered contributing factors to heat-related illnesses.

Radiant Heat

Radiation is the transfer of heat from hot objects through air to the body. Working around heat sources such as kilns or furnaces will increase heat stress. Additionally, working in direct sunlight can substantially increase heat stress. An employee is far more comfortable working at 80°F under cloudy skies than working at 80°F under sunny skies.

Humidity

Humidity is the amount of moisture in the air. Heat loss by evaporation is hindered by high humidity but helped by low humidity. As humidity rises, sweat tends to evaporate less. As a result, body cooling decreases and body temperature increases.

Air Movement

Air movement affects the exchange of heat between the body and the environment. As long as the air temperature is less than the employee's skin temperature, increasing air speed can help an employee stay cooler by increasing both the rate of evaporation and the heat exchange between the skin surface and the surrounding air.

JOB FACTORS

Clothing and PPE

Heat stress can be caused or aggravated by wearing PPE such as fire - or chemical - retardant clothing. Coated and non-woven materials used in protective garments block the evaporation of sweat and can lead to substantial heat stress. The more clothing worn or the heavier the clothing, the longer it takes evaporation to cool the skin. Remember that darker clothing absorbs more radiant heat than lighter-colored clothing.

Workload

The body generates more heat during heavy physical work. For example, a construction employee shoveling sand or laying brick in hot weather generate a tremendous amount of heat and are at risk of developing heat stress without proper precautions. Heavy physical work requires careful evaluation even at temperatures as low as 75°F to prevent heat disorders. This is especially true for employees who are not acclimated to the heat.

CONTROLLING HEAT STRESS

Heat stress can be controlled through education, engineering and work procedures. Controls will:

- Protect health: Illness can be prevented or treated while symptoms are still mild.
- Improve safety: Employees are less liable to develop a heat-related illness and have an accident. Heat stress often creeps up without warning. Many heat-induced accidents are caused by sudden loss of consciousness.
- Increase productivity: Employees feel more comfortable and are likely to be more productive as a result.

Engineering Controls

Engineering controls are the most effective means of preventing heat stress disorders and will be the first method of control. Engineering controls seek to provide a more comfortable workplace by using:

- Reflective shields to reduce radiant heat
- Fans and other means to increase airflow in work areas
- Mechanical devices to reduce the amount of physical work

Given the constantly changing nature of construction sites, engineering controls are not usually feasible. Proper work procedures are therefore required to prevent heat stress disorders.

