

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 could 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.

RESPONSIBILITIES

Employers

- Adjust work practices as necessary when labor complain of heat stress
- First try to control exposure through engineering controls
- Oversee heat stress training and acclimatization for new labor and for labor who have been off the job for a while
- Provide worker 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 labor are drinking enough water
- Determine a proper work/rest regimen for labor
- Arrange first aid training for labor
- When working in a manufacturing plant, for instance, a contractor may wish to adopt the plant's heat stress program if one exists
- Ensure that the program and procedures are documented and available to all labor

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 4 cups per hour) to maintain fluid levels and avoid dehydration

TRAINING

According to the National Institute of Occupational Safety and Health (NIOSH), heat stress training should cover the following components:

- Knowledge of heat stress hazards
- Recognition of risk factors, danger signs, and symptoms
- Awareness of first-aid procedures for, and potential health effects of, heat stroke
- Employee responsibilities in avoiding heat stress
- Dangers of using alcohol and/or drugs (including prescription drugs) in hot work environments

Employee Training

Training in the following topics will be provided to all supervisory and non-supervisory labor:

- Environmental and personal risk factors for heat illness
- Procedures for identifying, evaluating, and controlling exposures to the environmental and personal risk factors for heat illness
- Importance of frequent consumption of water (up to 4 cups per hour)
- The importance of acclimatization
- Different types of heat illness and common signs and symptoms of heat illness
- The importance of immediately reporting to the employer or designee symptoms or signs of heat illness
- Procedures for responding to symptoms of possible heat illness, including how emergency medical services will be provided should they become necessary
- Procedures for contacting emergency medical services, and if necessary, for transporting labor to a point where they can be reached by medical service personnel
- How to provide clear and precise directions to the work site

Supervisor Training

Prior to assignment to supervision of labor working in the heat, training on the following topics will occur:

- The information provided for employee training
- Procedures the supervisor will follow to implement controls as determined by the employer
- Emergency response procedures the supervisor will follow when an employee exhibits symptoms consistent with possible heat illness, including emergency response procedures
How to prevent employee heat related illnesses
- Supervisory personnel will be trained on the signs and symptoms of heat related illnesses. The training will include heat injure preventative measures. Supervisory personnel are required to complete training prior to supervising affected company employees.
- E&B employees acting as supervisors over company employees potentially exposed to heat stress be trained in the company's heat illness response and procedures in the event company employees exhibit symptoms of heat stress or illness.

PROCEDURES

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

Management

- Give labor frequent breaks in a cool shaded area away from heat (cooling period no less than 5 minutes). The area should not be so cool that it causes cold shock around 75° F is ideal
- 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 labor to become acclimated. A properly designed and applied acclimatization program decreases the risk of heat-related illnesses. Such a program exposes labor to work in a hot environment for progressively longer periods. NIOSH recommends that for labor who have had previous experience in hot jobs, the regimen should be: 50% exposure on day one; 60% on day two; 80% on day three; 100% on day four
- For new labor in a hot environment, the regimen should be 20% on day one, with a 20% increase in exposure each additional day
- Make allowances for labor who must 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 cup of water per hour
- Avoid beverages such as tea, coffee, or beer that make you pass urine more frequently

Where personal PPE must 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

Emergency Medical Response

E & B Oilfield Services, Inc. will have a written plan to provide emergency medical services

E & B Oilfield Services, Inc. will ensure the availability of a suitable number of appropriately trained persons to render first aid. E & B Oilfield Services, Inc. will inform all labor of the

- procedure to follow in case of injury or illness
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Emergency Transportation

Before labor are sent to a work site, E & B Oilfield Services, Inc. will ensure that arrangements are in place to transport injured or ill labor 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 person 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 types 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 worker 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, 2-way radio communications will be implemented. The telephone numbers of the following emergency services in the area shall be posted near the job telephone or otherwise made available to the labor where no job site telephone exists:

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

Response Time of EMS

E & B Oilfield Services, Inc. regards as important that from the time an accident happens, how many minutes it would take trained medical personnel to reach an injured worker.

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

- How long would it take our labor 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 feet away, but if it is across a limited access road, they may have to go 5 miles in one 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 ambulance and one medical team, they may be out on another emergency. It could take a long time for someone to respond to our call
- How large and complex is our work site? How difficult would it be for emergency services to find the place where the injured worker is? We may need to arrange for the emergency service 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 labor 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 labor. Hot and humid conditions can occur either indoors or outdoors.

Asbestos removal, work with hazardous wastes, and other operations that require labor 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 worker 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 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. Heat cramps can result. 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; replace salt by drinking commercially available carbohydrate/electrolyte replacement fluids such as Gatorade or Powerade. Supervisors will have commercially available carbohydrate/electrolyte replacement fluids on hand for emergency response.

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
- Breathlessness
- Nausea or vomiting
- Feeling faint or actually fainting

Labor 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 a worker becomes overheated and suffers heat exhaustion.

Heat Stroke

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 worker 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 or
- Place in cool shower or
- 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 should 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 worker is suffering from, call for medical assistance.

Heat Stress Risk Assessment Factors

Factors that should be considered in assessing heat stress include:

- Personal Risk Factors
- Environmental Factors
- Job Factors

Personal Risk Factors

It is difficult to predict who will be affected by heat stress and when, because individuals' susceptibility varies. There are, however, certain physical conditions that can reduce the body's natural ability to withstand high temperatures. Supervisors are required to take into account the physical characteristics of affected company workers when assigning tasks in heat stress environments, including, at a minimum the characteristics that contribute to heat related illness as age, weight, physical fitness, drug/alcohol use, and prior incidents of heat related illness. It is the determination of E & B Oilfield Services, Inc. to ensure that prior to 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: Laborers 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: Labor 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. Labor 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.

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: Labor 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. People who work in a hot environment should 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 6 to 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 days away from work. People returning to work after a holiday or long weekend – and their supervisors – should understand this. Employees should be allowed to gradually re-acclimatize to work conditions.

Environmental Factors

Environmental factors such as ambient air temperature, air movement, 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.

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. A worker 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 worker's skin temperature, increasing air speed can help labor 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 Personal Protective Equipment (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, construction labor 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 labor who are not acclimated to the heat.

Acclimatization

All employees are required to provide affected company employees with an appropriate period of acclimatization for new company workers exposed to heat stress environments.

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: Labor 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: Labor 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 should be the first method of control. All employees are required to place into effect specific procedures to control the effects of environmental factors, such as air temperature, humidity, air circulation, and radiant heat sources that are considered contributing factors to heat related illnesses. All employees are required to consider physical work factors that contribute to heat related illnesses when designing work procedures and controls. 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
- E&B will provide potable drinking water to all employees. Where water is not plumbed or otherwise in continuous supply, that the E&B will take appropriate actions to ensure that an adequate quantity of potable water is available to company workers.
- Affected company employees will be provided shaded areas for necessary breaks. The shaded area will be either open to fresh air or provided with ventilation for cooling.

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.

