

Policy Statement

Heat related illness (HRI) is a well-known, recognized workplace hazard. All work operations involving exposure to excessive temperatures have the potential to induce heat stress and heat related illnesses. This policy has been developed to address these issues. All employees will receive training relating to the causes and effects of, the personal and environmental factors that may lead to, and prevention measures to fight heat related illnesses.

Responsibilities

Preventing heat-related illness is a cooperative effort between this company and its employees.

Employer Responsibilities

It is the responsibility of this company to:

- Train employees about heat related illnesses and how to prevent them;
- Implement outdoor heat stress program;
- Evaluate and control outdoor heat stress factors;
- Encourage frequent water consumption;
- Adjust work practices as necessary when workers complain of heat stress;
- Make controlling exposures through engineering controls the primary means of control wherever possible;
- Oversee heat stress training and acclimatization for new workers and for workers 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 workers are drinking enough water;
- Determine a proper work/rest regimen for workers;
- Arrange first aid training for workers;
- When working in a manufacturing plant, for instance, a contractor may wish to adopt the plant's heat stress program if one exists; and
- Establish an emergency response plan.

Safety Committee Responsibilities

It is the responsibility of the safety committee to:

- Assist in training personnel in heat safety and heat-related illness prevention;
- Assist with periodic reviews and walkthroughs to identify hazards and determine controls for those hazards; and
- Offer management recommendations for improvements to the heat-illness prevention program.

Employee Responsibilities

Employees are expected to:

- Drink water frequently;
- 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;
- Find out whether any prescription medications you are required to take can increase heat stress;
- Get adequate rest and sleep;
- Drink small amounts of water regularly to maintain fluid levels and avoid dehydration; and
- Report signs and symptoms of heat-related illness to supervisor immediately.

Training

We will ensure every employee is provided training on preventing heat-related illness. This training will be provided at no cost to the employee during working hours.

Training will use only training material that is appropriate in content and vocabulary to educational level, literacy, and language of employees.

Training Components

The safety coordinator will ensure every employee is trained in the following minimum elements:

- Risk factors for heat-related illness;
- Different heat-related illnesses and how to recognize common signs and symptoms;
- Heat-related illness prevention procedures;
- Importance of drinking small quantities of water often;

- Importance of acclimatization, how it is developed, and how your worksite procedures address it;
- Importance of immediately reporting signs of heat-related illness to a supervisor;
- Procedures for responding to possible heat-related illness;
- Procedures to follow when contacting emergency medical services; and
- Procedures to ensure that clear and precise directions to the work site will be provided to emergency medical services.

Training Records

Training records will include the following information:

- The dates of the training sessions;
- The contents or a summary of the training sessions;
- The names and qualifications of persons conducting the training; and
- The names and job titles of all persons attending the training sessions.

Employee training records will be maintained for 3 years from the date on which the training occurred.

Policy

Introduction & Overview

Operations, indoor and outdoor, that involve working where there are high air temperatures, radiant heat sources, high humidity, direct physical contact with hot objects, or strenuous physical activities have a high potential for causing heat-related illness.

The body regulates its own temperature through sweat and circulating blood to the skin; however, high temperatures and high humidity make thermoregulation difficult. As the body is less able to cool itself, it must store the excess heat, raising the body's core temperature. An elevated core body temperature begins to have effects on a person's entire body. If the body's temperature rises too far, it ceases to be able to regulate its own temperature, which could result in death.

Risk Factors

There are many factors that determine the total risk a worker faces from excessive heat while at work. They basically fall into three main categories: risks from the environment, risks from the work being done, and risks from personal factors. At the core of temperature-related risk factors is the basic question of how hot a worker feels.

Environmental

Environmental risk factors include all the natural factors and unavoidable workplace hazards that impact a worker's thermal comfort.

The Heat Index

There are lots of ways to measure how hot a person feels in a given situation. OSHA recommends following the National Oceanographic and Atmospheric Administration-developed heat index, which combines both air temperature and relative humidity into a value that reflects the apparent temperature.

Temperature

The temperature is determined by a number of variables including the season, cloudiness, and other meteorological factors. Reflected heat, and heat from equipment can also contribute to the temperature of a work setting. 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. Keeping track of the temperature at the workplace is a critical element of any program to prevent heat-related illness.

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 workers stay cooler by increasing both the rate of evaporation and the heat exchange between the skin surface and the surrounding air. However, if the ambient temperature is too far above body temperature and dry, strong winds can be very hazardous.

NOAA's National Weather Service Heat Index

Temperature (°F)

	80	82	84	86	88	90	92	94	96	98	100	102	104	106	108	110	
Relative Humidity (%)	40	80	81	83	85	88	91	94	97	101	105	109	114	119	124	130	136
	45	80	82	84	87	89	93	96	100	104	109	114	118	124	130	137	
	50	81	83	85	88	91	95	99	103	108	113	118	124	131	137		
	55	81	84	86	89	93	97	101	106	112	117	124	130	137			
	60	82	84	88	91	95	100	105	110	116	123	129	137				
	65	82	85	89	93	98	103	108	114	121	128	136					
	70	83	86	90	95	100	105	112	119	126	134						
	75	84	88	92	97	103	109	116	124	132							
	80	84	89	94	100	106	113	121	129								
	85	85	90	96	102	110	117	126	135								
90	86	91	98	105	113	122	131										
95	86	93	100	108	117	127											
100	87	95	103	112	121	132											

Note: Heat index values were devised for shady, light wind conditions. Exposure to full sunshine can increase heat index values by up to 15°F. Also, strong winds with very hot, dry air, can be very dangerous

	Caution		Extreme Caution		Danger		Extreme Danger
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Equipment and Processes

Equipment and processes at the work site contribute greatly to the heat stress a worker faces. Hot engines and work that involves high temperature processes can significantly raise temperature and put workers at risk.

Contact with hot surfaces can also present the danger of burns.

Work According to Level of Exertion	
Light Work	<ul style="list-style-type: none"> Using a table saw Some walking about Operating a crane, truck, or other vehicle Welding
Moderate Work	<ul style="list-style-type: none"> Laying brick Walking with moderate lifting or pushing Hammering nails Tying rebar Raking asphalt Sanding drywall
Heavy Work	<ul style="list-style-type: none"> Carpenter sawing by hand Shoveling dry sand Laying block Ripping out asbestos Scraping asbestos fireproofing material
Very Heavy Work	<ul style="list-style-type: none"> Shoveling wet sand Lifting heavy objects

Job-specific Exertion

The body generates more heat during heavy physical work. For example, construction workers 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 workers who are not acclimated to the heat.

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.

Time

Working for longer stretches of time and during the heat of the day exposes workers to more heat. Workers should cycle through light work and heavy work, taking breaks as necessary. Heavy physical work should be done early morning or late night.

Personnel-Specific

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.

Age

As the body ages, its sweat glands become less efficient. Workers 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.

Weight

Workers who are overweight are less efficient at losing heat and are more easily subject to heat-related illness.

Skin Pigmentation

Non-pigmented skin absorbs more heat (approximately 20%) than highly-pigmented skin.

Fitness

Being physically fit aids your ability to cope with the increased demands that heat places on your body.

Caffeine & Alcohol

Alcohol consumption during the previous 24 hours leads to dehydration and increased risk of heat stress. While recent research suggests that caffeine may not be as detrimental to hydration and thermoregulation as formerly believed, in large amounts it does act as a diuretic and can contribute to dehydration.

Medical Conditions

In order to pump blood to the skin and cool the body, the heart rate increases. This can cause stress on the heart, which is particularly hazardous to those with heart disease or high blood pressure.

Certain medications may cause heat intolerance by reducing sweating or increasing urination. People who work in a hot environment should consult their physician or pharmacist before working while taking certain medications.

Workers 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.

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); and
- 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. Workers should be allowed to gradually re-acclimatize to work conditions.

Heat-Related Illness Prevention

Number and Duration of Exposures

Rather than be exposed to heat for extended periods of time during the course of a job, workers should, wherever possible, be permitted to distribute the workload evenly over the day and incorporate work-rest cycles. Work-rest cycles give the body an opportunity to get rid of excess heat, slow down the production of internal body heat, and provide greater blood flow to the skin.

Workers employed outdoors are especially subject to weather changes. A hot spell or a rise in humidity can create overly stressful conditions. The following practices can help to reduce heat stress:

- Postponement of nonessential tasks,
- Permit only those workers acclimatized to heat to perform the more strenuous tasks,
or

- Provide additional workers to perform the tasks keeping in mind that all workers should have the physical capacity to perform the task and that they should be accustomed to the heat.

Engineering Controls

A variety of engineering controls can be introduced to minimize exposure to heat. For instance, improving the insulation on a furnace wall can reduce its surface temperature and the temperature of the area around it. In a laundry room, exhaust hoods installed over those sources releasing moisture will lower the humidity in the work area. In general the simplest and least expensive methods of reducing heat and humidity can be accomplished by:

- Opening windows in hot work areas,
- Using fans, or
- Using other methods of creating airflow such as exhaust ventilation or air blowers.

Rest

Providing cool rest areas in hot work environments considerably reduces the stress of working in those environments. There is no conclusive information available on the ideal temperature for a rest area. However, a rest area with a temperature near 76°F appears to be adequate and may even feel chilly to a hot, sweating worker, until acclimated to the cooler environment. The rest area should be as close to the workplace as possible. Individual work periods should not be lengthened in favor of prolonged rest periods. Shorter but frequent work-rest cycles are the greatest benefit to the worker.

Fluid Intake

In the course of a day's work in the heat, a worker may produce as much as 2 to 3 gallons of sweat. Because so many heat disorders involve excessive dehydration of the body, it is essential that water intake during the workday be about equal to the amount of sweat produced. Most workers exposed to hot conditions drink less than needed because of an insufficient thirst drive. A worker, therefore, should not depend on thirst to signal when and how much to drink. Instead, the worker should drink 5 to 7 ounces of fluids every 15 to 20 minutes to replenish the necessary fluids in the body. There is no optimum temperature of drinking water, but most people tend not to drink warm or very cold fluids as readily as they will cool ones. Whatever the temperature of the water, it must be palatable and readily available to the worker. Individual drinking cups should be provided — never use a common drinking cup.

Heat acclimatized workers lose much less salt in their sweat than do workers who are not adjusted to the heat. The average American diet contains sufficient salt for acclimatized workers even when sweat production is high. If, for some reason, salt replacement is

required, the best way to compensate for the loss is to add a little extra salt to the food. Salt tablets **should not** be used.

Sanitation standards require employers provide "potable water" at work sites, which is water that meets the drinking water standards of the state or local authority having jurisdiction, or water that meets the quality standards prescribed by the EPA's drinking water regulations.

Protective Clothing

Clothing inhibits the transfer of heat between the body and the surrounding environment. Therefore, in hot jobs where the air temperature is lower than skin temperature, wearing clothing reduces the body's ability to lose heat into the air.

When air temperature is higher than skin temperature, clothing helps to prevent the transfer of heat from the air to the body. However, this advantage may be nullified if the clothes interfere with the evaporation of sweat.

In dry climates, adequate evaporation of sweat is seldom a problem. In a dry work environment with very high air temperatures, protective clothing could be an advantage to the worker. The proper type of clothing depends on the specific circumstance. Certain work in hot environments may require insulated gloves, insulated suits, reflective clothing, or infrared reflecting face shields. For extremely hot conditions, thermally conditioned clothing is available. One such garment carries a self-contained air conditioner in a backpack, while another is connected a compressed air source which feeds cool air into the jacket or coveralls through a vortex tube. Another type of garment is a plastic jacket which has pockets that can be filled with dry ice or containers of ice.

Buddy System

A worker may not recognize his own signs and symptoms of heat-related illness. Workers should be encouraged to look after each other to ensure the team stays safe and healthy. A buddy system assigns each worker to one other worker to ensure there is at least one other person keeping tabs on the heat health of every worker.

High-Heat Procedures and Planning

Extreme Heat Advisories

The national weather service issues heat-related notifications that can help ensure work planning includes appropriate controls and processes to prevent heat-related illness and treat them as they arise:

Excessive Heat Outlook

Excessive Heat Outlooks are issued when the potential exists for an excessive heat event in the next 3-7 days. An Outlook provides information to those who need

considerable lead time to prepare for the event, such as public utility staff, emergency managers and public health officials.

Excessive Heat Watch

Excessive Heat Watches are issued when conditions are favorable for an excessive heat event in the next 24 to 72 hours. A Watch is used when the risk of a heat wave has increased but its occurrence and timing is uncertain. A Watch provides enough lead time so those who need to prepare can do so, such as cities officials who have excessive heat event mitigation plans.

Excessive Heat Warning and Advisories

Excessive Heat Warning/Advisories are issued when an excessive heat event is expected in the next 36 hours. These products are issued when an excessive heat event is occurring, is imminent, or has a very high probability of occurring. The warning is used for conditions posing a threat to life or property. An advisory is for less serious conditions that cause significant discomfort or inconvenience and, if caution is not taken, could lead to a threat to life and/or property.

Actions to Prevent Heat Related Illness Based On Temperature

OSHA suggested heat index thresholds		
Temperature	Risk Level	Protective Measures
<91°F	Lower Caution	Basic heat safety and planning
91°F – 103°F	Moderate	Implement precautions and heighten awareness
103°F – 115°F	High	Additional precautions to protect workers
>115°F	Very high/Extreme	Even more aggressive measures

As temperatures rise, managers and supervisors need to take responsibility for ensuring appropriate procedures are being followed to reduce the ill effects of heat on workers.

Lower Caution

- Adequate Drinking Water
- Available Medical Services
- Acclimatize new and returning workers who perform strenuous work.
- Check forecast regularly.
- Encourage workers to wear sunscreen and use other protections from direct sunlight.
- Depending on site conditions, take actions for moderate risk conditions
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Moderate

- Follow “Lower Caution” precautions.
- Alert workers to index, identify additional precautions necessary.
- Remind workers to drink small amounts of water through the day.
- Respond to heat-related illnesses and medical emergencies immediately.
- Review heat-related illness symptoms and signs and the established site-specific precautions.
- Schedule frequent breaks in cool, shaded areas.
- Acclimatize new and returning workers.
- Set up a buddy system.
- Instruct supervisors to watch workers for signs of heat-related illness.
- Depending on site conditions:
 - takes actions for high risk conditions.

High

- Follow “Moderate” precautions.
- Have knowledgeable person onsite to modify work activities and the work/rest schedule as necessary.
- Establish and enforce work/rest schedules.
- Adjust work activities.
- Take extra precautions for workers in clothing that may add to heat hazard.
- Maintain effective communication with crew.

Very High to Extreme

- Follow “High” precautions.
- Reschedule non-essential outdoor work.
- Move essential outdoor work to coolest part of work shift.
- Stop work if necessary.

Heat Disorders & First Aid Measures

Heat Stroke

Heat stroke is the most serious heat-related disorder. It occurs when the body becomes unable to control its temperature: the body's temperature rises rapidly, the sweating mechanism fails, and the body is unable to cool down. When heat stroke occurs, the body temperature can rise to 106 degrees Fahrenheit or higher within 10 to 15 minutes. Heat stroke can cause death or permanent disability if emergency treatment is not given.

Symptoms of heat stroke include:

- Hot, dry skin or profuse sweating
- Hallucinations
- Chills
- Throbbing headache
- High body temperature
- Confusion/dizziness
- Slurred speech

Take the following steps to treat a worker with heat stroke:

- Call 911 and notify their supervisor.
- Move the sick worker to a cool shaded area.
- Cool the worker using methods such as:
 - Soaking their clothes with water.
 - Spraying, sponging, or showering them with water.
 - Fanning their body.

Heat Exhaustion

Heat exhaustion is the body's response to an excessive loss of the water and salt, usually through excessive sweating. Workers most prone to heat exhaustion are those that are elderly, have high blood pressure, and those working in a hot environment.

Symptoms of heat exhaustion include:

- Heavy sweating
- Extreme weakness or fatigue
- Dizziness, confusion
- Nausea
- Clammy, moist skin
- Pale or flushed complexion
- Muscle cramps
- Slightly elevated body temperature
- Fast and shallow breathing

Treat a worker suffering from heat exhaustion with the following:

- Have them rest in a cool, shaded or air-conditioned area.
- Have them drink plenty of water or other cool, nonalcoholic beverages.
- Have them take a cool shower, bath, or sponge bath.

NOTE: Pesticide poisoning has similar symptoms as heat exhaustion.

Heat Syncope

Heat syncope is a fainting (syncope) episode or dizziness that usually occurs with prolonged standing or sudden rising from a sitting or lying position. Factors that may contribute to heat syncope include dehydration and lack of acclimatization.

Symptoms of heat syncope include:

- Light-headedness
- Dizziness
- Fainting

Workers with heat syncope should:

- Sit or lie down in a cool place when they begin to feel symptoms.
- Slowly drink water, clear juice, or a sports beverage.

Heat Cramps

Heat cramps usually affect workers who sweat a lot during strenuous activity. This sweating depletes the body's salt and moisture levels. Low salt levels in muscles causes painful cramps. Heat cramps may also be a symptom of heat exhaustion.

Symptoms of heat cramps include:

- Muscle pain or spasms usually in the abdomen, arms, or legs.

Workers with heat cramps should:

- Stop all activity, and sit in a cool place.
- Drink clear juice or a sports beverage.
- Do not return to strenuous work for a few hours after the cramps subside because further exertion may lead to heat exhaustion or heat stroke.
- Seek medical attention if any of the following apply:
 - The worker has heart problems.
 - The worker is on a low-sodium diet.
 - The cramps do not subside within one hour.

Sun Burn

Sunburn can make it more difficult for the body to release heat in addition to causing pain and discomfort. Severe sunburns can blister and become infected. Sunscreen and appropriate clothing can prevent sunburn.

Heat Rash

Heat rash is a skin irritation caused by excessive sweating during hot, humid weather.

Symptoms of heat rash include:

- Heat rash looks like a red cluster of pimples or small blisters.
- It is more likely to occur on the neck and upper chest, in the groin, under the breasts, and in elbow creases.

Workers experiencing heat rash should:

- Try to work in a cooler, less humid environment when possible.
- Keep the affected area dry.
- Dusting powder may be used to increase comfort.

Forms and Attachments

On the following pages, please find the following documents:

- Heat Illness Training
Documentation

These forms may be reproduced for the purposes of implementing and maintaining a safety and health program.

