

Sample Heat Stress Prevention Program



Prepared for: xxxxxx

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Date: xx/xx/xxxx

The purpose of this document is to provide general guidance for the development of a heat stress prevention program and is not intended to be a final document. It is the users responsibility to ensure that final written programs comply with all standards, regulations and best practices.

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Subpart A – Purpose, Scope and Objectives

The management of **ABC COMPANY** recognizes summer heat and humidity conditions can increase the risk of heat-related illnesses and injuries. Our main concern is the safety of our workforce. Any worker exposed to hot and humid conditions is at risk of heat illness or injury and is, therefore, covered by this policy.

This policy provides information on heat related illnesses, symptoms, first aid and controls for managing heat stress. The policy specifies minimum requirements for the prevention of heat-related incidents. These requirements are critically important during June through August.

Subpart B – Roles and Responsibilities

1. Management is responsible for the implementation of the program, including the necessary leadership, direction, enforcement and resources to ensure the program's effectiveness.
2. The safety coordinator is responsible for providing assistance through training, identification of potential hazards, and the ability to make recommendations for corrective action.
3. Supervisors and persons leading work crews have responsibility for implementing the minimum requirements below on a day-to-day basis at their site.
4. All workers shall remain aware of the signs and symptoms of heat stress in order to prevent potential injuries or illnesses. All workers should be involved in job planning and discussing and mitigating the risks of heat during the summer season. Employees are responsible for:
 - a. Educating yourself
 - b. Drinking plenty of water
 - c. Taking frequent breaks in the shade
 - d. Planning ahead
 - e. Knowing what to do if you (or someone else) start experiencing heat stress
 - f. Effects of medications
 - g. Effects of caffeine
 - h. Diet and food intake
 - i. Acclimation to hot and cool environments
 - j. Personal health and capabilities

Subpart C – Procedures

The requirements of this policy are as follows:

1. The maximum projected heat index shall be determined by supervision prior to beginning work activities. During hot summer months, the heat index should be monitored throughout working hours each day to ensure the projected daily maximum has not been exceeded. NOAA devised heat index values for shaded conditions and light winds. Full sunshine can increase heat index values by up to 15° F. Strenuous work and the use of heavy or specialized protective clothing also have an additive effect.

As a result, the risk at a specific heat index could be higher than that listed in the table below if the work is in direct sunlight without a light breeze, or if work involves strenuous tasks or the use of heavy or specialized protective clothing. The following table provides general guidelines according to NOAA’s National Weather Service to determine the heat index.

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
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	119	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	126	130					
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										

Likelihood of Heat Disorders with Prolonged Exposure or Strenuous Activity

Caution
 Extreme Caution
 Danger
 Extreme Danger

2. When the heat index is above 91°F, every person performing work must:
 - a. Have an adequate supply of drinking water immediately available
 - b. Have immediate access to a shaded location for cooling down
 - c. Identify and mitigate site specific heat-related hazards on the Job Safety Environmental Analysis (JSEA)
 - d. Take a minimum 10 minute rest break every hour

3. When the heat index increases beyond 91°F, it is expected that supervisors will implement additional site-specific protective measures as needed as outlined in this policy.
4. When the Heat Index is above 115°F, there is extreme danger and the most aggressive precautions should be taken.
5. The company has adopted the following risk level index as a guide to for preventive measures. As the heat index value goes up, more preventive measures are needed to protect workers. Heat index values are divided into four bands associated with four risk levels. These bands differ from those appearing in the NOAA heat index chart above, which was developed for the public.

Heat Index	Risk Level	Recommended Protective Measures
<91°F	Low (Caution)	Take basic heat safety and planning steps
91°F to 103°F	Moderate	Heighten awareness and implement additional precautions
103°F to 115°F	High	Take additional precautions
>115°F	Extreme Danger	Take the most aggressive precautions

6. The following procedures are established to control the effects of environmental factors that can contribute to heat-related illness. The most common environmental factors are air temperature, humidity, radiant heat sources and air circulation. The protective measures as the heat index rises above 91 degrees will be utilized to establish controls. These protective measures should be documented.

Heat Index	Risk Level	Recommended Protective Measures for Workers Actions Workers and Leaders Can Take
<91°F	Low (Caution)	<ul style="list-style-type: none"> ▪ Provide drinking water ▪ Ensure that adequate medical services are available ▪ Plan ahead for times when the heat index is forecasted to be higher ▪ Wear sunscreen
91°F to 103°F	Moderate	In addition to the steps listed above: <ul style="list-style-type: none"> ▪ Remind workers to drink water often ▪ Review heat-related illness topics with workers: how to recognize heat-related illness, how to prevent it, and what to do if someone gets sick ▪ Schedule frequent breaks in cool, shaded area ▪ Acclimate workers by gradually introducing them to tasks ▪ Set up buddy system/instruct supervisors to watch workers for signs of heat-related illness
103°F to 115°F	High	In addition to the steps listed above: <ul style="list-style-type: none"> ▪ Alert workers of high risk conditions ▪ Actively encourage workers to drink plenty of water ▪ Limit physical exertion (e.g. use mechanical lifts) ▪ Have a knowledgeable person at the worksite who is well-informed about heat-related illness and able to determine appropriate work/rest schedules ▪ Establish and enforce work/rest schedules ▪ Adjust work activities (e.g., reschedule work, pace/rotate jobs) ▪ Use cooling techniques ▪ Watch/communicate with workers at all times
>115°F	Extreme Danger	If work is to be done, in addition to the steps listed above: <ul style="list-style-type: none"> ▪ Alert workers of extreme heat hazards ▪ Establish and enforce water drinking schedule ▪ Develop and enforce protective work/rest schedules ▪ Conduct physiological monitoring (e.g., pulse, temperature, etc) And consider: <ul style="list-style-type: none"> ▪ Rescheduling non-essential activity for days with a reduced heat index or to a time when the heat index is lower ▪ Moving work tasks to the coolest part of the work shift; consider earlier start times, split shifts, or evening and night shifts ▪ Postponing strenuous work tasks and those requiring the use of heavy or non-breathable clothing or impermeable chemical protective clothing when the heat index is at or above 115°F <p>Stop work if essential control methods are inadequate/unavailable</p>

Subpart D – Access to Drinking Water

1. Employees must drink plenty of water even if they are not thirsty. As a rule of thumb, drink at least one cup of water every 15 minutes for high risk conditions. Employees must have access to a sufficient supply of potable drinking water throughout the work shift.
2. Where the drinking water supply is not plumbed or otherwise continuously supplied, management must provide sufficient quantity of bottled water and or sanitary water containers throughout the work shift.
3. When water containers are provided, the container must be kept tightly closed, routinely cleaned and sanitized, marked as drinking water, and disposable cups should be available. Dipping cups from containers and use of a common drinking cup is prohibited for sanitary reasons.
4. Water should have a palatable (pleasant and odor-free) taste and water temperature should be 50°F to 60°F, if possible.
5. Sanitation standard 29 CFR 1910.141 requires that 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 U.S. EPA's drinking water regulations (40 CFR Part 141).

Subpart E – Additional Considerations

1. Access to shade: Employees suffering from heat illness or believing a preventative recovery period is needed, must be provided access to an area with shade that is either open to the air or provided with ventilation or cooling. Such access to shade should be permitted at all times.
2. Acclimation: Individual susceptibility to heat-related illness can vary widely between workers. Workers become gradually acclimatized when exposed to hot conditions for several weeks. Physical changes in blood vessels and in sweating occur to dissipate heat more effectively. When the heat index is high, special precautions are needed to protect un-acclimatized workers while they adjust, particularly on the first few days of the job.
3. Work/rest cycles: 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, slow down the heart rate, and provide greater blood flow to the skin.

- a. For the best protection from heat-related illness, workers should spend the rest periods of the cycle in a cool place, for example in a lightly air conditioned room, trailer or vehicle, or if one is not available, then in full shade.
 - b. Rest periods do not necessarily mean that the workers are on break; these can be productive times. During the rest periods, workers may continue to perform mild or light work, such as completing paperwork, sorting small parts, attending a meeting, or receiving training.
 - c. Have a knowledgeable person at the worksite that is well-informed about heat-related illness and able to modify work activities and the work/rest schedule as needed. When evaluating an appropriate work/rest schedule:
 - d. Shorten work periods and increase rest periods:
 - i. As temperature rises
 - ii. As humidity increases
 - iii. When sun gets stronger
 - iv. When there is no air movement
 - v. When protective clothing or gear is worn
 - vi. For heavier work assign new and un-acclimatized workers lighter work and longer rest periods. Monitor these workers more closely.
 - e. When possible, more frequent shorter periods of exposure to heat are better than fewer longer exposures. This means that the work/rest schedules are often based on 1-hour cycles and might call for a rest period of 15 minutes every hour during hot weather, but 45 minutes per hour when temperature and humidity are extreme. Individual requirements may vary greatly. The work/rest schedules do not guarantee protection against heat-related illness and should not be used as a substitute for good judgment or experience.
4. Personal factors: Supervisors should take these personal factors into consideration before assigning a task where there is a possibility of a heat related illness occurring. The most common personal factors that can contribute to heat related illness are age, weight/fitness, degree of acclimatization, metabolism, drug/alcohol use, prior heat-related illness, medical conditions such as hypertension, diabetes, etc.
5. Physical factors: Supervisors shall take these physical factors into consideration before assigning a task where there is a possibility of a heat related illness occurring. Adjustments in the work rest cycle shall be considered. The most common physical factors that can contribute to heat related illness are type of work, level of physical activity and duration, and clothing color, weight and breathability. The use of PPE (e.g., rain suits and chemical protective suits, flame retardant clothing) will interfere with the body's ability to cool itself during heat related periods.
6. Environmental facts: Supervisors should take into consideration environmental factors that affect the amount of stress a worker faces in a hot work area to include: temperature, humidity, radiant heat (such as from the sun or a furnace) and air movement.

Subpart F – Training

1. Supervisors will be trained in the techniques used to identify heat related illnesses prior to supervising employees, including the risk of heat related illnesses, first aid and medical responses to follow when an employee exhibits symptoms consistent with possible heat illness, and emergency response procedures.
2. All personnel should receive heat stress awareness training annually, prior to the summer season. During working conditions in hot environments, all exposed employees will be instructed frequently on the signs and symptoms of heat related illnesses and precautions to be taken to reduce risks.
3. The training will be accomplished by reviewing the contents of this policy and procedures initially and annually thereafter. The training will be recorded on a training documentation form and the original and a copy placed in the appropriate HSE files.

Subpart H – First Aid Procedures

Prompt first aid can prevent permanent injury to the brain and other vital organs. The body reacts to high external temperature by circulating blood to the skin which increases skin temperature and allows the body to give off its excess heat through the skin. However, if the muscles are being used for physical labor, less blood is available to flow to the skin and release the heat.

Sweating is another means the body uses to maintain a stable internal body temperature in the face of heat. However, sweating is only effective if the humidity level is low enough to permit evaporation and if the fluids and salts lost are adequately replaced.

If the body cannot dispose of excess heat, it will store it. When this happens, the body's core temperature rises and the heart rate increases. As the body continues to store heat, the individual begins to lose concentration and has difficulty focusing on a task, may become irritable or sick, and often loses the desire to drink. The next stage is most often fainting and death is possible if the person is not removed from the heat stress.

1. **Heat stroke**, the most serious health problem for workers in hot environments, is caused by the failure of the body's internal mechanism to regulate its core temperature. Sweating stops and the body can no longer rid itself of excess heat. Victims of heat stroke will die unless treated promptly.

Symptoms may include:

- Mental confusion
- Delirium

Signs include:

- Hot dry skin
- Red, mottled, or bluish skin
- Body temperature of 106 degrees F or higher
- Irrational behavior
- Convulsions
- Loss of consciousness
- Coma

First Aid:

1. **Call for help (9-1-1)**
2. Move to a cool area
3. Remove outer clothing
4. Soak with cool water
5. Fan vigorously to increase cooling

2. Heat exhaustion results from loss of fluid through sweating when a worker has failed to drink enough fluids or take in enough salt or both. The worker with heat exhaustion still sweats but experiences symptoms. Treatment is usually simple.

Symptoms may include:

- Nausea
- Headache
- Dizziness
- Thirst
- Extreme weakness or fatigue
- Giddiness

Signs include:

- Moist/clammy skin
- Pale or flushed complexion
- Normal to slightly higher temperature
- Fainting

First Aid:

- Rest in a cool place
- Drink an electrolyte solution (a beverage used to quickly restore potassium, calcium, and magnesium salts)
- Apply ice packs

Severe cases involving victims who vomit or lose consciousness may require longer treatment under medical supervision.

3. Heat cramps are painful spasms of the muscles caused when workers drink large quantities of water, but fail to replace their bodies' salt loss. Tired muscles (those used for performing the work) are usually the ones most susceptible to cramps. Cramps may occur during or after working hours and may be relieved by taking liquids by mouth or saline solutions intravenously for quicker relief, if medically determined to be required.

4. Fainting may be a problem for the worker that has not been acclimated to a hot environment who simply stands still in the heat. Victims usually recover quickly after a brief period of lying down. Moving around, rather than standing still, will usually reduce the possibility of fainting.

5. Heat rash, also known as prickly heat, may occur in hot and humid environments where sweat is not easily removed from the surface of the skin by evaporation. When extensive or complicated by infection, heat rash can be so uncomfortable that it inhibits sleep and impedes a worker's performance or even results in temporary total disability. It can be prevented by resting in a cool place and allowing the skin to dry.