

**PURPOSE**

Hot workplaces can lead to harmful heat stress. Heat stress may result in several illnesses. Heat stress results from a combination of internal (body) heat production from doing work and external heat exposure from the environment. Both aspects need to be controlled to reduce heat stress. Climate Engineers Inc. is dedicated to the protection of our employees from occupational injuries and illnesses. Climate Engineers is responsible for providing a safe working environment, and the employees have and must assume the responsibility of working safely. Climate Engineers will provide Personal Protective Equipment to all employees at no cost.

**HOT WEATHER PRECAUTIONS**

The body reacts to high external temperature by circulating blood to the skin which increases skin temperatures and allows the body to give off 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 heat. Working in hot places puts extra strain on your body. Once you understand how your body reacts to heat, then you can prevent heat related disorders.

**RISK FACTORS**

- Age
- Weight
- Physical Fitness
- Metabolism
- Medications
- Alcohol or Drugs
- Medical Conditions (Hypertension)
- Air Temperature (90°F or above)
- Humidity
- Direct Sun
- Radiant Heat Source
- Low air velocity
- Clothing

**HEAT DISORDERS**

- **Fatigue** – Muscles tire more quickly in the heat because the body cools itself by sending more blood to the upper layers of the skin. Relatively this allows less blood to be available to provide energy to active muscles, the brain, and other internal organs when needed for peak performance. For first aid, rest in a cooler or shady area before a more serious condition develops. Gradual adjustments to working in the heat will eventually reduce heat fatigue.
- **Heat Rash** – Body heat is released through sweating, but, when the air is humid, the skin will remain moist. If the sweat ducts become plugged, a rash can develop. The heat rash may disappear when you return to a cooler area, but washing the area and allowing the skin to dry will help. Beyond first aid, if the rash shows signs of infection, get medical attention. Heat rash can be prevented by being able to rest in a cool place for periodically throughout the day and by regularly bathing and drying the skin.

**OUR GOAL IS ZERO INJURIES IN THE WORKPLACE**

- **Fainting** – As blood circulates to the skin to aid in cooling the body, the blood can accumulate in the lower part of the body if you are standing still. Fainting can be the result when the brain doesn't get an adequate blood supply. Lay down in a cool area to recover from the fainting spell. Acclimatization to the heat reduces the chances for fainting. Moving around helps blood circulate through body and also helps prevent fainting.
- **Heat Cramps** – Muscles can develop painful cramps or spasms from salt imbalances in the body. Sweating and not replacing fluids can cause cramps. Drink, about 5 to 7 ounces of fluids every 15 to 20 minutes to replenish your body fluids. **Don't wait until you feel thirsty.** Avoid beverages containing caffeine or alcohol – they promote more fluid loss through urination. Drinking salted liquids of commercially available carbohydrate replacement (Gatorade & Powerade) help with recovery from heat cramps. If salt replacement is required, adding a little extra salt to food is better than using salt tablets.
- **Heat Exhaustion** – Heat exhaustion may result when a large amount of body fluid has been lost through sweating. *The symptoms may resemble the early signs of heat stroke.* The victim becomes extremely weak or fatigued, giddy, nauseous, and can have a headache. The person still sweats, the skin is clammy and moist, and the body temperature remains at or near normal temperatures. In serious cases, the victim may vomit or lose consciousness. Heat exhaustion can be treated by resting in a cool place and drinking plenty of fluids, but severe cases may require care for several days. Medical attention may be required.
- **Heat Stroke** – This is a life threatening condition. It occurs when the body's temperature regulatory system fails. In heat stroke, the victim's skin is hot and dry. Body temperature is usually 105 degrees F or higher. The victim is mentally confused or delirious and can have convulsions or become unconscious. Immediate treatment by medical professionals can prevent brain damage or death. Until help arrives, the victim should be moved to a cool area, clothing should be soaked with water, and the body should be vigorously fanned to increase cooling. **No person suspected of being ill from heat stroke should be left unattended.**

## PREVENTIONS

- Know signs/symptoms of heat illnesses.
- Gradually increase workloads and allow more frequent breaks for workers new to the heat or those that have been away from work to adapt to working in the heat (acclimatization).
- Take rests and breaks in a cooler area out of direct sun and other heat sources.
- Drink plenty of liquids. Drink often, every 15 minutes.
- Avoid beverages containing alcohol or caffeine.
- Use power tools to reduce manual labor.
- DO NOT wear dark-colored clothing or clothing made of synthetic fabrics such as polyester, nylon and rayon; this type of clothing will absorb and hold heat. Wear lightweight, light colored, loose fitting clothes.
- Know environmental factors to plan work day to accommodate for possible heat stress conditions. Utilize heat index (graph combining heat and humidity) below to assist in determining possible heat stress conditions.

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**NOAA's National Weather Service**

**Heat Index**

Temperature (°F)

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

**Likelihood of Heat Disorders with Prolonged Exposure or Strenuous Activity**

- Caution
- Extreme Caution
- Danger
- Extreme Danger

Classification	Heat Index	Effect on the body
Caution	80°F - 90°F	Fatigue possible with prolonged exposure and/or physical activity
Extreme Caution	90°F - 103°F	Heat stroke, heat cramps, or heat exhaustion possible with prolonged exposure and/or physical activity
Danger	103°F - 124°F	Heat cramps or heat exhaustion likely, and heat stroke possible with prolonged exposure and/or physical activity
Extreme Danger	125°F or higher	Heat stroke highly likely

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