



Minnesota Electrical Association

Electrical Toolbox Talks

Heat Stress

Your body produces heat as part of its internal chemical processes. If your body is working in a hot environment, it may not be able to shed excess heat through exhalation (breathing) and evaporation (sweating). Emergencies due to excessive heat (hyperthermia) are often seen in people who exercise outside, work outside, or work indoors in poorly ventilated environments during peak hot periods in the summer. If the humidity is high, the evaporation process can slow even more. Keep in mind heat-related emergencies could result from both dry heat, when humidity is low, and days when the humidity level is elevated. (See the heat condition chart on the next page.) In addition, this chart may be copied and given to your employees to use as a guide.

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	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										

Likelihood of Heat Disorders with Prolonged Exposure or Strenuous Activity

- Caution
- Extreme Caution
- Danger
- Extreme Danger

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Heat Stress

(continued)

Heat cramps, heat exhaustion, and heat stroke are three heat-related emergencies.

HEAT CRAMPS - Signs, Symptoms, and Treatment

- This person perspires heavily and may have been drinking fluids throughout the day. As you sweat, your body loses water and salt. The water is usually replenished, but loss of salt can cause cramping. Cramps can develop in the legs, arms, and abdomen. Other signs are dizziness and fainting.
- Move person to a cool place and administer fluids with electrolytes. If the cramping does not subside, or if the person becomes worse or you feel the person needs further care, contact emergency personnel.

HEAT EXHAUSTION - Signs, Symptoms, and Treatment

- This person has been working or playing in a hot environment and has been exposed to excessive heat. The body has lost water and salt. The outside temperature and humidity is making it difficult for the body to cool itself. Results may include shallow breathing, cold clammy skin, dizziness, weakness, heavy perspiration, and possibly unconsciousness.
- Administer fluids with electrolytes if they are conscious, move person to a cool place and contact emergency personnel if the person does not improve quickly or you feel the person needs further care.

HEAT STROKE - Signs, Symptoms, and Treatment

- **THIS IS AN EMERGENCY!** This is the next stage after heat exhaustion. A person's body is not able to rid itself of excessive heat and the body actually stops sweating. This person may have one or more of the following symptoms: deep breathing, shallow breathing, red skin, a strong or rapid pulse, dilated pupils, seizures and unconsciousness. Emergency personnel should be contacted immediately! Try to cool the person and wait for emergency personnel.

Consult your Right to Know written program or Minnesota OSHA for further information on this topic.

Heat Stress

(continued)

Heat Condition Chart

Heat condition may be reported as:

- Category: 0,1,2,3,4,5
- Wet bulb globe temperature (WBGT)

Use heat condition information to determine required water intake and work/rest cycles. (The gray row shows the current condition.)

Heat Category	WBGT Index (°F)	Easy Work/Rest (Minutes)	Water Intake/Hr (Qts)	Moderate Work/Rest (minutes)	Water Intake/Hr (Qts)	Hard Work/Rest (minutes)	Water Intake/Hr (Qts)
0	<78°	NL	N/A	NL	N/A	NL	N/A
1	78-81.9°	NL	1/2	NL	3/4	40/20	3/4
2	82-84.9°	NL	1/2	50/10	3/4	30/30	1
3	85-87.9°	NL	3/4	40/20	3/4	30/30	1
4	88-89.9°	NL	3/4	30/30	3/4	20/40	1
5	>90°	50/10	1	20/40	1	10/50	1

N/A: Not applicable

NL: No limit

To help protect yourself from heat illness:

- Try to work in the shade so that you are not exposed to direct sunlight.
- Drink plenty of fluids. Avoid beverages that contain caffeine or alcohol. Drink fluids that will replace your electrolytes- like sport drinks
- Drink often and before you are thirsty.
- If you go for long periods before you need to urinate, you're probably not drinking enough.
- Wear lightweight, light colored clothing that breathes or will wick perspiration away.
- Modify work schedules to work in cooler parts of the day.
- If working in unconditioned space, take frequent breaks to rehydrate.

IF THE WORKER IS NOT ALERT or is confused, call 911 immediately and inform them that it might be heat stroke.

Resources: www.osha.gov/Publications/osha3154.pdf

