



Heat Stress in the Workplace

Reducing the Risk of Heat Illness

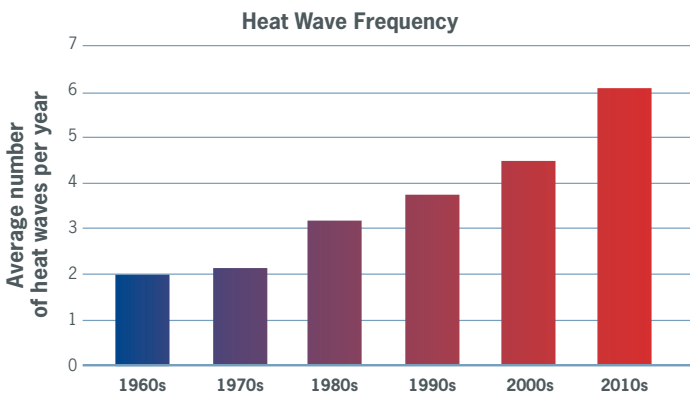
We hear it in the news every day: As the Earth's climate has warmed, hotter-than-usual days and nights are becoming more common all over the world. April 2022 was the third-hottest month that India has seen over the past 122 years, according to government officials. Closer to home, heat waves are occurring more often in major cities across the US. Their frequency has increased steadily, from an average of two heat waves per year during the 1960s to six per year during the 2010s (Environmental Protection Agency).

As one might expect, increases in heat waves can lead to heat-related illnesses and deaths in the workplace. Environmental conditions such as air temperature, humidity and sunlight certainly play a role in heat-related fatalities (43 work-related deaths in 2019,

per the Bureau of Labor Statistics). However, employers should also consider other factors when identifying hazardous heat exposures for employees who work both inside and outside. These include:

- Heat sources such as ovens, furnaces, and other heated processes
- Level of physical activity leading to body heat production
- Clothing or protective gear that may affect the body's ability to eliminate heat
- Individual "risk factors" such as employee health conditions (e.g., diabetes, heart or respiratory disease, high blood pressure, etc.), use of alcohol/drugs, medications or varying levels of fitness

HEAT WAVE CHARACTERISTICS IN THE US BY DECADE, 1961 - 2019*



*Averaged for 50 metropolitan areas by decade

Source: Environmental Protection Agency

Heat Stress and Occupational Exposures

Heat stress occurs when the body cannot eliminate excess heat due to working in a heated environment, wearing restrictive clothing or due to other individual risk factors previously noted. Heat stress causes the body's core temperature to rise and heart rate to increase. Heat stress can cause symptoms including confusion, dizziness, fatigue, cramps, and nausea, and could lead to illnesses such as heat exhaustion or heat stroke.

Experts believe that heat stress can cause numerous occupational injuries like falls, struck-by incidents, machinery accidents, and vehicle accidents. Heat stress may also contribute to near misses due to employee fatigue or distraction.

Examples of industries with potential heat stress exposures include landscaping services, solid waste collection, sheet metal manufacturing, commercial bakeries, building or road

construction, motor vehicle parts manufacturing, police/fire/EMS, and public entities/townships who offer swimming pools (e.g., lifeguarding) and park services.

Recognizing Heat Hazards Recommendations for Employers

Hazard identification includes recognizing heat hazards and the risk of heat illness due to high temperature, humidity, sun and other thermal exposures, work demands, clothing or personal protective equipment, and personal risk factors. Below are recommendations for reducing the risk of work-related heat hazards.

Use Heat Stress Tools to Identify Hazards

One way to identify heat stressors is by using the following tools:

OSHA's Heat Safety App: This phone app uses a "feels like" measure of how hot it feels when relative humidity is considered with the actual air temperature. It also offers first aid suggestions for different types of heat stress.



Heat Stress Monitor: These devices measure heat stress in direct sunlight and take into account temperature, humidity, wind speed, sun and cloud cover.

National Weather Service Heat Index: This chart measures how hot it really feels when the effects of humidity are added to high temperatures.

NWS 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	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 and/or Strenuous Activity

Caution
 Extreme Caution
 Danger
 Extreme Danger

Source: National Weather Service

Other Recommendations

Acclimate Workers: Adapt workers to their environment by exposing them for progressively longer periods to hot work environments. New workers and those returning from a prolonged



Prevent Heat Illness at Work

Indoor and outdoor heat exposure can be dangerous.

Nearly 3 out of 4 heat illness fatalities happen during the first week of work. New and returning workers need to build tolerance to heat by taking frequent breaks and working shorter shifts to start. Dangerous heat exposure can occur indoors or outdoors, in any season. Employers can keep workers safe by following these simple safety practices:

- Follow the 20% Rule—on the 1st day, you should not allow employees to work more than 20% of a shift at full intensity in the heat. Increase their time by no more than 20% a day until they are used to working in the heat.
- Provide cool drinking water—encourage workers to drink at least one cup every 20 minutes, even if they are not thirsty.
- Rest breaks—allow workers time to recover from heat in a shady or cool location.
- Dress for the heat—have workers wear a hat and light-colored, loose-fitting, breathable clothing if possible.
- Watch out for each other—encourage workers to monitor themselves and others for signs of heat illness.
- Look for any signs of heat illness, including fainting, dizziness, nausea, and muscle spasms, and act quickly—when in doubt, call 911.
- Offer training on the hazards of heat exposure and how to prevent illness.
- Develop an Emergency Action Plan on what to do if a worker shows signs of heat-related illness.



absence should gradually begin working in the heat. Schedule work during cooler hours of the day. Provide cool water or liquids to workers and have them avoid drinks with caffeine, alcohol or large amounts of sugar. Provide shaded rest periods or an air-conditioned room with water breaks. Use air misters and air-cooled garments.

Monitor At-Risk Workers: Supervisors should monitor workers who are at risk of heat stress. Workers who are 65 years of age or older, are overweight, have heart disease or high blood pressure, or take medications may be affected by extreme heat. Use a buddy system and avoid having employees work solo—especially in areas of high heat. Look out for heat-induced illness signs such as being confused or loss of consciousness.

Offer Training: Provide heat-stress training that includes information about worker risk, prevention, symptoms, and the importance of monitoring oneself and coworkers for symptoms.

Create an Emergency Plan: Have an emergency plan and communicate it to supervisors and workers. Emergency plan considerations include:

- What to do when someone is showing signs of heat illness
- How to contact emergency help
- How long it will take for emergency help to arrive; and how to train workers on appropriate first aid measures until help arrives. OSHA's heat safety app identifies the signs and symptoms of heat stroke, along with first aid suggestions, including moving the employee to a shaded area, removing outer clothing, cooling quickly with water or an ice bath if possible, or calling 911 if medical care is not available.

If you have any questions or would like additional information, please contact your local PMA Risk Control Consultant or reach out to us at heretohelp@pmagroup.com.

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