

Worker Training Guide

What You Need to Know About the Dangers of Heat

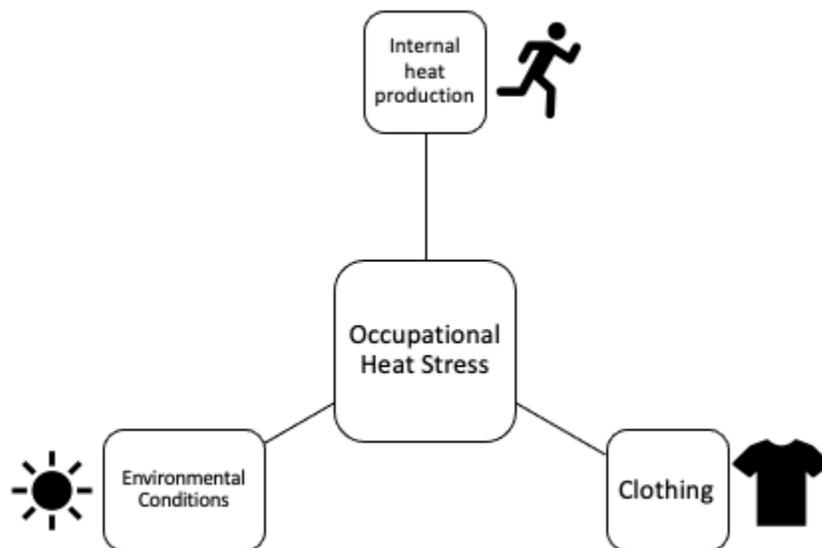
What is Occupational Heat Stress?

You can experience heat stress in the workplace through three different ways: 1) environmental heat stress (environmental conditions), 2) heat generated within the body through physical work (internal heat production) and 3) clothing.

Environmental Conditions: Environmental heat through ambient temperature, humidity, solar radiation, other radiant sources of heat (e.g., ovens)

Internal Heat Production: To meet work demands, you have to perform physical work that may increase your body's internal temperature. Heavy exertion and/or prolonged hours of work tend to be associated with greater internal heat production.

Clothing: Depending on your occupation, you may have to wear heavy personal protective gear or clothing to protect you from various hazards on the worksite. Wearing encapsulating clothing limits the body's ability to get rid of heat (i.e., limits the body's ability to cool itself) and can result in increased internal body temperature.



What are the Negative Consequences of Heat Stress? Why Should I care?

Heat stress can affect your health, safety, and productivity during work. It's important for you to be able to identify heat-related illnesses and injuries to protect yourself and other workers.

Below is a list of the most common exertional heat-related illnesses and injuries and their corresponding signs and symptoms.

Exertional Heat Illnesses	Definition	Signs and Symptoms	Treatment
Heat Syncope	A fainting episode due to heat, body temperature is normal	Dizziness, weakness, tunnel vision, decreased or weak pulse, pale or sweaty skin, loss of consciousness	Move worker to shade, sit or lie down worker when symptoms occur, monitor vital signs, elevate legs to promote blood returning to heart, rehydrate
Heat-related Cramps	Painful, involuntary muscle spasms (usually occurring in legs) in the heat	Painful, involuntary muscle spasms (usually occurring in legs) in the heat	Adequate fluid and electrolyte replacement, stretching of the muscle, rest
Heat Exhaustion Most Common Heat Illness	Heat-related condition when <u>core temperature between 96.8-105°F</u>	fatigue, nausea, fainting, weakness, vomiting, dizziness, pale, chills, diarrhea, irritability, headache, decreased muscle coordination,	move to shaded area, cool worker (ice bags, ice towels, cooling vests, etc.), remove excess clothing, elevate legs to promote venous return, provide fluids and rehydrate
Heat Stroke	A life-threatening medical condition with the following diagnostic criteria: (1) Central Nerve System (CNS) dysfunction and (2) core temperature greater than 105°F (or 40.58 °C).	See Below	

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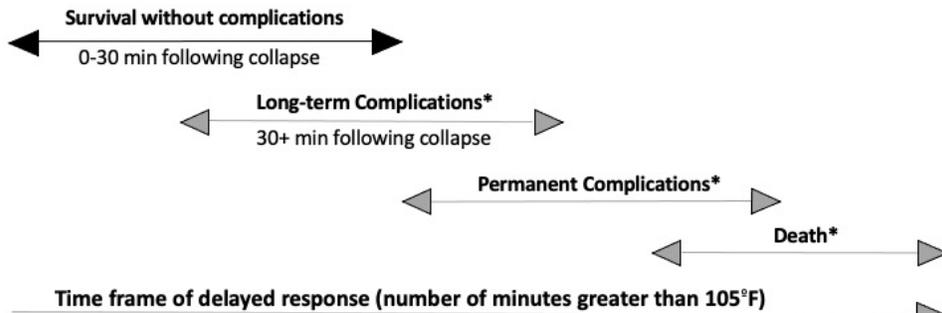
Exertional Heat Stroke (EHS)

This is a medical EMERGENCY!

Signs	Symptoms
Extreme Hyperthermia (greater than 105°F)	Dizziness
Altered Consciousness	Headache
Disorientation	Nausea
Confusion; Look “out of it”	Muscle Cramps
Vomiting	Dehydration
Staggering	Irritability/Combative
Decreased Work Capacity	Muscle Weakness
Profuse Sweating	Irrational Behavior

What do I do if I think Someone is Suffering from EHS?

Complications due to Delayed Treatment of EHS



*The prognosis spectrum ranges from survival without complications, if cooling is initiated within the first 30 minutes following collapse, to death, if cooling is significantly delayed.

-Call 911 - This is a serious medical emergency! Make sure if you are the one calling, someone is staying with the EHS worker. Make sure your supervisor is immediately notified of the situation to assist or call 911 for you.

-Initiate whole body cold water immersion to reduce the workers' body temperature. Time is CRITICAL.

-Your supervisor should work with EMS to ensure that the worker is cooled appropriately prior to transport to the hospital (cool first, transport second)

Please go to <https://ksi.uconn.edu/emergency-conditions/heat-illnesses/exertional-heat-stroke/heat-stroke-treatment/> for more information on EHS treatment

Other Medical Conditions Caused by Occupational Heat Stress

There are many other medical conditions or injuries that are caused by heat. The dangers of occupational heat stress are not limited to just heat-related illnesses. The following are examples of conditions that may be increased under heat stress.

(1) *Cardiac events*

As heat increases cardiovascular strain, it is important to recognize that workers with cardiovascular risk factors have an increased likelihood of suffering from a serious cardiac event under heat stress.

(2) *Kidney Injury*

Recent evidence has suggested that dehydration and heat stress are linked to acute kidney injury, which can increase risk of developing kidney disease.

(3) *Accidents*

Heat can increase risk of accidents as it can negatively affect cognition, decrease thermal comfort, and alter work site conditions (e.g., fog safety glasses, sweaty hands cause slippery tools).

Examples of Occupational Factors that Contribute to Heat-related Injury and Illnesses

- Occupational Heat Stress (environment, physical exertion, clothing)
- Limited air movement
- Poor workplace regulations (current heat safety policies and procedures)
- Prolonged work hours
- Worker characteristics
- Lack of heat safety training
- Emphasis on productivity over safety and health
- No environmental monitoring

Are YOU at Risk?

There are several factors that may increase your risk of heat-related illness and injury. If you have any of the following conditions, pay close attention to how you feel while working under heat stress.

- Sedentary lifestyle
- Type 1 and Type 2 Diabetes
- Age (i.e., older workers)
- Cardiovascular disease
- Hypertension
- Obesity
- Autonomic Dysfunction (dysfunction of the autonomic nervous system that is in control of automatic, unconscious, and involuntary functions of the body)
- Overzealous (i.e., refusing to take a break)
- Malignant Hyperthermia
- Kidney Disease
- Medications that affect thermoregulation, central nervous system, sodium balance
- Heat Unacclimatized (i.e., workers who are not used to the heat yet)

Prevention

(1) *Proper Heat Hygiene*

To avoid the negative consequences of heat stress, you should come to work prepared to perform your job. You are at a greater risk of heat-related illness if you are:

- Dehydrated
- Sleep deprived
- Fatigued or not recovered
- Experiencing gastrointestinal dysfunction
- Fasted (haven't eaten)

- Experiencing psychological stress

There are several indications that place you at a high risk of heat-related illness AND will require that you receive medical clearance prior to engaging in work. You should inform your supervisor if you are experiencing the following:

- Signs and symptoms of illness or infection
- Fever
- Diarrhea
- Vomiting
- Medications that affect thermoregulation, sodium balance or central nervous system function. ASK YOUR DOCTOR IF YOU ARE NOT SURE.

(2) Hydration

Hydration is extremely important to maintain normal body temperatures. You should be hydrated during rest breaks, before your workshift and after your workshift. Bring your own water bottle to work if you are able to. To ensure you are hydrated, check your urine color. If you have light colored urine, it is *likely* you are hydrated.

(3) Body Cooling

Body cooling acts to reduce internal temperature to alleviate the strain associated with heat stress. You are encouraged to utilize the cooling strategies provided by your supervisor during their rest breaks and during physical work if applicable. To achieve optimal benefits from cooling, you should try to perform pre-work cooling and/or post cooling (for recovery).

Each of these prevention strategies is described in detail in [\[INSERT link to specific site on the NHSC website\] \[Link to document once available\]](#)

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