TDI Safety @ Work
Division of Workers' Compensation

# Summer Safety Tips for Workers

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After working a shift in a hot, humid manufacturing facility in late August, a 41-year-old certified welder collapsed in the parking lot on the way to his car. With an internal body temperature of 108 degrees, he was rushed to the hospital, where he died from advanced heat stroke complications.[1]

According to the U.S. Bureau of Labor Statistics, five Texans died of work-related heat illnesses in 2018. Another 270 Texans – nearly half of whom worked in construction or excavation – reported job-related heat ailments requiring time away from work. These Texans accounted for about 7% of the illnesses and more than 10% of the fatalities associated with workplace environmental heat exposure in the U.S.[2]


## *Texas: The Hottest Place in the World?*

It is no secret to any Texan that summers here are long and hot. According to the National Oceanic and Atmospheric Administration, the hottest maximum temperature ever recorded in the state – 120 degrees -- occurred in the small town of Monahans, Texas, in Ward County near Odessa on June 28, 1994. However, it may come as a surprise that in the scientific journal, *Environmental Physiology*, researchers, using "effective temperatures," – an index that calculates humidity and air movement with thermometer readings – named sections of Texas among the hottest places in the world. That's right! The lower Rio Grande Valley and along the Texas Gulf Coast had higher effective temperatures than Death Valley in the Mojave Desert. The only places with higher effective temperatures than Texas were the Red Sea and the Indus Valley.[3]

What is more, Texas is trending hotter. In 2019, Texas wrapped up its extended summer by shattering September heat records with average temperatures 3 to 5 degrees above previous benchmarks in Dallas, Austin, San Antonio, Del Rio, Houston, and Tyler.[4] This followed an unprecedented August in Austin, which logged 27 days of triple-digit temperatures, and left meteorologists estimating that Texans can expect about 22 more extreme heat days today than in 1979.[5]

# What is Heat Stress?

When exposed to high temperatures, the body's internal temperature rises, and the heart rate increases. As the internal temperature continues to rise, the body stores heat, and the person may become irritable, lose concentration, or have difficulty focusing on a task. They can develop a heat rash, heat cramps, or heat exhaustion. Sickness, such as nausea and vomiting may occur, and the person may lose the desire to drink. The next stage is often fainting. A more serious illness, heat stroke, may bring permanent disability, organ failure, and death if the person is not cooled immediately.

# Who is at Risk?

Millions of U.S. workers are exposed to extreme heat in their workplaces. Notable industries where workers have suffered heat-related illnesses include agriculture; construction (especially road and roofing work); landscaping; firefighting and hazardous waste operations; mail and package delivery; and oil and gas well operations. However, dangerous heat exposure is not limited to outdoor jobs. Summer temperatures also bring increased risks of heat-related illnesses to workers in bakeries, kitchens, laundries, boiler rooms, mills, foundries, manufacturing facilities, warehouses, and more.

High humidity, direct physical contact with hot objects, nearness to a radiant heat source, and strenuous physical activities also contribute to job-related heat illnesses. Workers older than 65 and those with heart conditions, high blood pressure, or obesity are at greater risk of heat-related complications. However, each year young, healthy workers also experience the negative effects of environmental heat exposure. Fortunately, with proper training, education, and information, these illnesses and fatalities are preventable.

## OSHA-NIOSH Heat Safety Tool App


The free OSHA-NIOSH Heat Safety Tool is a useful resource for planning outdoor work activities based on how hot it feels throughout the day. It features real-time heat index and hourly forecasts specific to your location, as well as occupational safety and health recommendations from OSHA and NIOSH.

The OSHA-NIOSH Heat Safety Tool features:

- the current heat index and risk levels specific to your current location;
- recommendations specific to heat index-associated risk levels;
- an interactive, hourly forecast of heat index values, risk level, and recommendations for planning outdoor work activities in advance;
- location, temperature, and humidity controls to calculate variable conditions; and
- signs, symptoms, and first aid information for heat-related illnesses.

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# Managing Heat Stress in the Workplace

In 2010, Austin passed an ordinance making it the first city in Texas to mandate one ten-minute rest break per four-hour shift for construction workers. Dallas followed suit in 2015.[6] Similar workplace laws are lacking across the state. However, the Occupational Safety and Health Act's general duty clause requires employers to furnish each worker a place of employment "free from recognized hazards that are causing or are likely to cause death or serious physical harm."

Ensuring that workers know the risks associated with heat and how to manage the threat is one of the most important safety measures managers can provide. Include the following as part of a regular employee safety training program:

# Prevent Heat Illnesses

1

## *Stay Hydrated*

Provide workers with lots of water and encourage them to drink at least one pint every hour. Avoid liquids that can dehydrate the body, such as caffeine. Consider carrying frozen water bottles to ensure cool hydration is available later in the shift. Ensure water is close and available on all job sites.

2

## *Modify Work Schedules*

Monitor the temperature throughout the day and modify work schedules to limit strenuous activity during peak hours of heat from 11 a.m.-4 p.m. Allow or arrange for frequent rest periods with water breaks in shaded or air-conditioned areas. Firefighters and hazardous waste site workers should remove gear and take cooldown breaks at intervals.

3

## *Avoid Clothing that Traps Heat*

Waterproof or impermeable clothing and wet or sweat-soaked clothing can trap heat. Avoid wearing rain-resistant or emergency protective gear longer than necessary. Layer a work shirt over an undershirt to help keep sweat and heat away from the skin. Choose lightweight, light-colored, loose-fitting clothing, if possible. Carry spare shirts to replace wet or sweaty shirts as needed.

4

## *Wear Gear that Cools You.*

Consider wearing wet neck towels, gel-filled cooling neck scarves or cooling vests to keep body heat down. Several types of cooling vests are available.

5

## *Modify the Environment.*

If it is impractical to air condition a hot indoor space, consider air conditioning a nearby room such as a break room where workers can cool down. Consider portable air conditioning units to cool down individual workstations. Fans can help, but they blow hot air!

6

## *Monitor Body Functions*

Monitor heat's effect on the body by checking the color of your urine – dark yellow urine means it is time to hydrate. Outside workers and those in hot quarters expect to sweat in the heat, but decreased sweating can also mean dehydration.

7

## *Slowly Acclimate New or Returning Workers to the Heat*

Gradually increase workloads and allow more frequent breaks for workers new to the heat or those who have been away from work. Their bodies need time to adapt to working in the heat.

8

## *Know the Signs of Heat Illness*

Feeling dizzy or sluggish outside on a hot day can be the body's way of signaling a more serious condition.

# Symptoms of Heat Illnesses

## RISK LEVEL 1: Heat Cramps

Heat cramps are muscle spasms caused by salt and water loss. These heat cramps often occur in the hands, calves, or feet. Spasms may stop on their own, but lingering soreness can remain for 24-48 hours.

## RISK LEVEL 2: Heat Exhaustion

Heat exhaustion is more than a feeling of fatigue or weakness. Its symptoms include headache, dizziness, wet skin, irritability, confusion, increased thirst, nausea, or vomiting. Fainting may occur as a person's body tries to regulate the heat by lowering blood pressure. This can lead to a stroke or other life-threatening conditions if left untreated. Heat exhaustion occurs when the body's core temperature increases to 101-104 degrees.

## RISK LEVEL 3: Heat Stroke

Heat stroke is an emergency medical condition. Workers should get help fast. The symptoms of heat stroke can include lack of sweat, reddened dry skin, confusion, fainting, collapse, seizures, and organ failure. Heat stroke occurs when the body's core temperature reaches 104 degrees or higher.

# Respond to Heat Illnesses

**Stop Physical Activity**
When showing signs of a heat illness, stop physical activity and move to a cool place.

**Cool the Body**
Remove outer clothing. Fan and mist the body. Apply ice bags or ice towels, if available.

**Drink Water**
Drink cool water or a watered-down sports drink, if able to drink.

**Position the Body for Safety**
Lay an employee on their left side if the person is nauseous, light-headed, or unconscious. In the event of fainting, lay the worker on their back and raise their legs six or eight inches above the heart. If the person has a seizure, remove nearby objects to prevent injury.


**Call 911.** If a person refuses water, vomits, or starts to lose consciousness, seek medical attention immediately. If the person is unconscious and has stopped breathing, give CPR (cardiopulmonary resuscitation) until emergency medical responders arrive. If dizziness, cramping, nausea, or headache persist for more than an hour, call a supervisor for help and seek medical care.