

# HEAT STRESS

Prevention of heat stress in workers is very important. Depending on the area of the country in which you are located, your workers may be exposed to extreme heat or work in hot environments for three to six months a year and may be at risk of heat stress. Exposure to extreme heat can result in occupational illnesses and injuries of four types: heat stroke, heat exhaustion, heat cramps and heat rashes. Heat can also increase the risk of injuries as it may result in sweaty palms, fogged-up safety glasses and dizziness. Burns may also occur from accidental contact with hot surfaces or steam.

Employees at risk of heat stress include not only those working outdoors, such as construction workers and farmers, but also those such as firefighters, bakery workers, miners and factory and boiler room workers in hot environments. Workers at greater risk of heat stress include those who are 65 or older, are overweight, have lung disease, heart disease or high blood pressure or take medications, such as diuretics, that may make them more vulnerable to the effects of extreme heat.

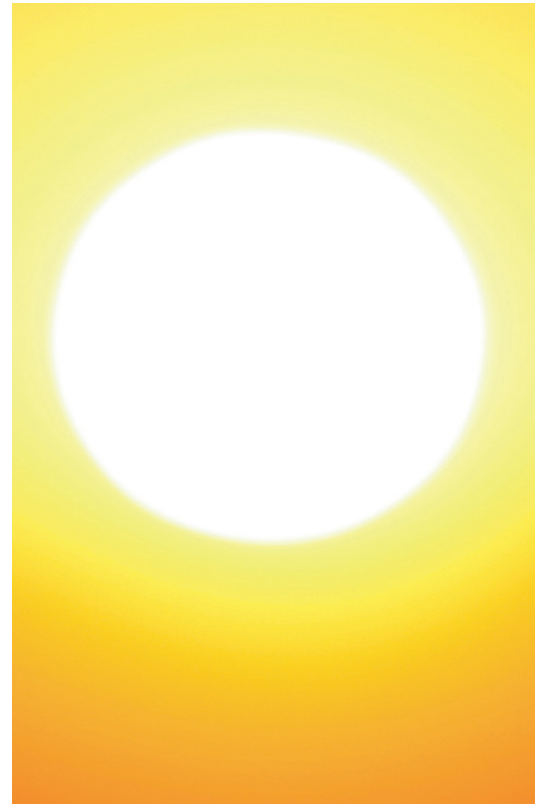
While the four heat stress conditions exhibit some similar characteristics, it is important to recognize each condition and the treatment appropriate for that condition. Employers should train workers to understand what heat stress is, how it affects their health and safety and how it can be prevented.

## HEAT STROKE

Heat stroke is the most serious heat-related disorder. It occurs when the body becomes unable to control its temperature: the body's temperature rises rapidly, the sweating mechanism fails and the body is unable to cool down. When heat stroke occurs, the body temperature can rise to 106 degrees Fahrenheit or higher within 10 to 15 minutes. Heat stroke can cause death or permanent disability if emergency treatment is not given.

Symptoms of heat stroke include:

- Hot, dry skin (no sweating)
- Hallucinations
- Chills
- Throbbing headache
- High body temperature
- Rapid pulse
- Confusion/disorientation
- Dizziness
- Slurred speech



## FIRST AID

To treat a worker with heat stroke:

- Call 911 and notify their supervisor
- Move the sick worker to a cool shaded area
- Cool the worker by:
  - Soaking their clothes with water
  - Spraying, sponging or showering them with water
  - Fanning their body

## HEAT EXHAUSTION

Heat exhaustion is the body's response to an excessive loss of water and salt, usually through excessive sweating. Workers most prone to heat exhaustion are those that are elderly, have high blood pressure, and those working in a hot environment.



Symptoms of heat exhaustion include:

- Heavy sweating
- Extreme weakness or fatigue
- Dizziness, confusion
- Nausea (can include vomiting)
- Clammy, moist skin
- Pale or flushed complexion
- Muscle cramps
- Slightly elevated body temperature
- Fast and shallow breathing

## FIRST AID

To treat a worker suffering from heat exhaustion:

- Have them rest in a cool, shaded or air-conditioned area
- Have them drink plenty of water or other cool, nonalcoholic beverages
- Have them take a cool shower, bath or sponge bath

## HEAT SYNCOPE

Heat syncope is a fainting (syncope) episode or dizziness that usually occurs with prolonged standing or sudden rising from a sitting or lying position. Factors that may contribute to heat syncope include dehydration and lack of acclimatization.

Symptoms of heat syncope include:

- Light-headedness
- Dizziness
- Fainting

## FIRST AID

Workers with heat syncope should:

- Sit or lie down in a cool place when they begin to feel symptoms
- Slowly drink water, clear juice or a sports beverage

## HEAT CRAMPS

Heat cramps usually affect workers who sweat a lot during strenuous activity. This sweating depletes the body's salt and moisture levels. Low salt levels in muscles causes painful cramps. Heat cramps may also be a symptom of heat exhaustion.

## SYMPTOMS

- Muscle pain or spasms, usually in the abdomen, arms or legs

## FIRST AID

Workers with heat cramps should:

- Stop all activity and sit in a cool place
- Drink clear juice or a sports beverage
- Do not return to strenuous work for a few hours after the cramps subside because further exertion may lead to heat exhaustion or heat stroke
- Seek medical attention if any of the following apply:
  - The worker has heart problems
  - The worker is on a low-sodium diet
  - The cramps do not subside within one hour

# HEAT RASH

Heat rash is a skin irritation caused by excessive sweating during hot, humid weather.

Symptoms of heat rash include:

- Heat rash looks like a red cluster of pimples or small blisters
- It is more likely to occur on the neck and upper chest, in the groin, under the breasts and in elbow creases

## FIRST AID

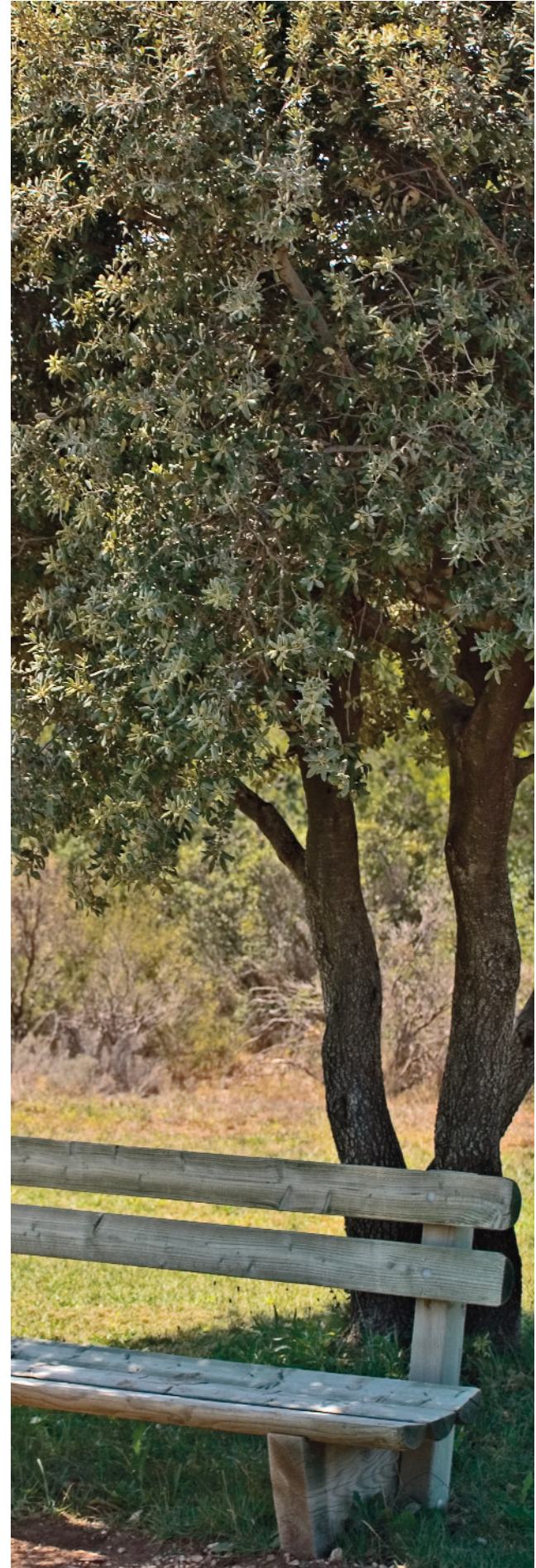
Workers experiencing heat rash should:

- Try to work in a cooler, less humid environment when possible
- Keep the affected area dry
- Dusting powder may be used to increase comfort

## RECOMMENDATIONS FOR EMPLOYERS

Employers should take the following steps to protect workers from heat stress:

- Schedule maintenance and repair jobs in hot areas for cooler months
- Schedule hot jobs for the cooler part of the day
- Acclimatize workers by exposing them for progressively longer periods to hot work environments
- Reduce the physical demands of workers
- Use relief workers or assign extra workers for physically demanding jobs
- Provide cool water or liquids to workers
- Provide rest periods with water breaks
- Provide cool areas for use during break periods
- Monitor workers who are at risk of heat stress
- Provide heat stress training that includes information about:
  - Worker risk
  - Prevention
  - Symptoms
  - The importance of monitoring themselves and coworkers for symptoms
  - Treatment
  - Personal protective equipment



# RECOMMENDATIONS FOR WORKERS

Workers should avoid exposure to extreme heat, direct sunlight and high humidity when possible. When these exposures cannot be avoided, workers should take the following steps to prevent heat stress:

- Wear light-colored, loose-fitting, breathable clothing such as cotton
  - Avoid non-breathing synthetic clothing
- Gradually build up to heavy work
- Schedule heavy work during the coolest parts of day
- Take more breaks in extreme heat and humidity
  - Take breaks in the shade or a cool area when possible
- Drink water frequently (enough that you never become thirsty)
- Avoid drinks with caffeine, alcohol and large amounts of sugar
- Excessive sweating can lead to loss of electrolytes such as sodium, whose replacement is critical and can be accomplished by drinking sports drinks in addition to water
- Be aware that protective clothing or personal protective equipment may increase the risk of heat stress
- Monitor their own physical condition and that of their coworkers

Much of the material in this *Bulletin* comes from the National Institute for Occupational Safety and Health (NIOSH) [site](#).

## CONTACTS

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