

Heat Stress



Working in Hot Environments

Fifty to seventy percent of work related injuries happen within the first few days of working in warm or hot environments. Our bodies need time to acclimate to the heat. If workers start a job without properly acclimating to the heat, they are at major risk factor for fatal outcomes.



Things to look out for that can increase the chances of heat illness are:

- heavy physical activity
- warm or hot environmental conditions
- lack of acclimatization
- wearing clothing that holds in body heat



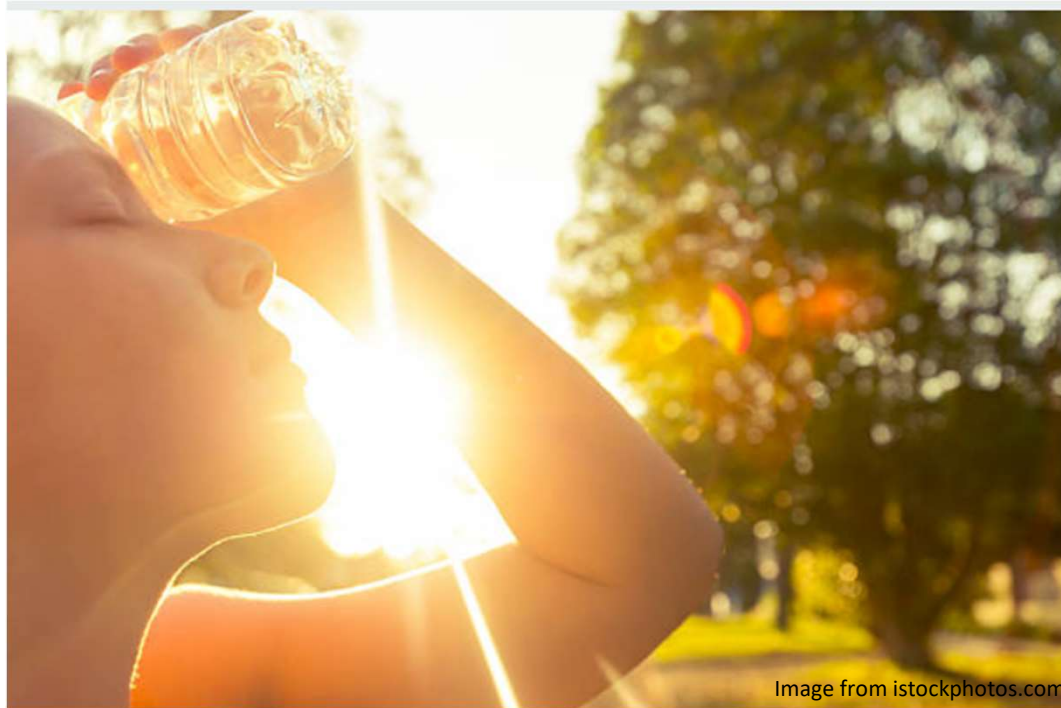
Hazardous heat exposure does not only happen while working outdoors, it can also occur when working indoors. Over exposure to heat can also happen when there is not a heat wave during the summer, if conditions are right, heat exposure can happen any season. The following is a list of some industries where workers have suffered heat-related illnesses.

Outdoor	Indoor
Agriculture	Bakers, Kitchens, Laundries (heat generated appliances)
Construction (roofing, roadwork, outdoor construction)	Electrical and Utility workers
Landscaping	Fine Services
Mail and package delivery	Iron, steel mill, and Foundry workers
Oils and gas operators	Manufacturing with Hot local heat furnaces
	Warehouse workers



Heat Related Illness

There are multiple heat related illnesses that can affect workers. Some of the symptoms are non-specific. This means that when a worker is performing physical labor in a warm environment, any unusual symptom can be a sign of overheating.



Heat Stroke

Is a condition marked by fever and often by unconsciousness, caused by failure of the body's temperature-regulating mechanism when exposed to excessively high temperature. Symptoms include:

- Confusion
- Slurred Speech
- Unconsciousness
- Seizures
- Heavy Sweating or Hot Dry Skin
- High Body Temperature
- Rapid Heart Rate

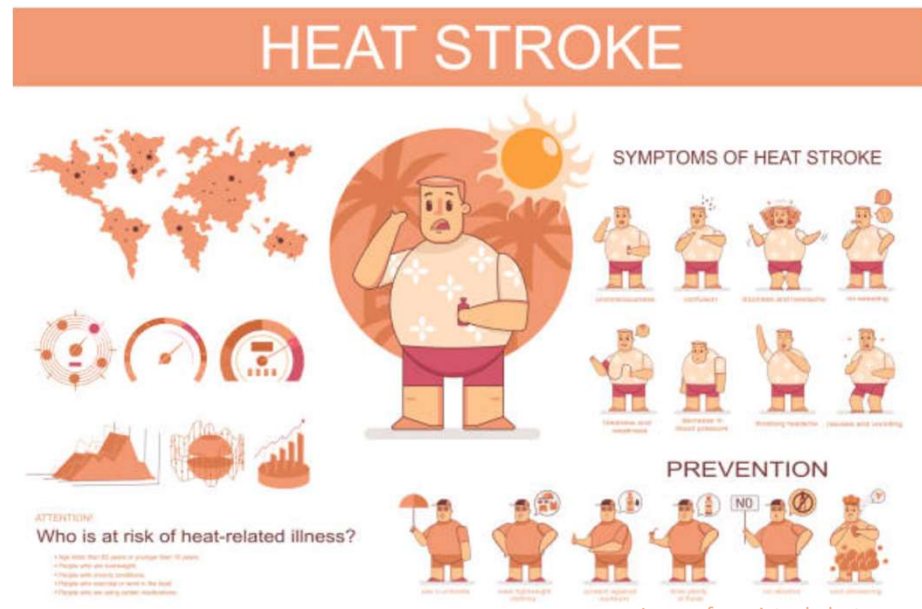


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Heat Stroke Treatment

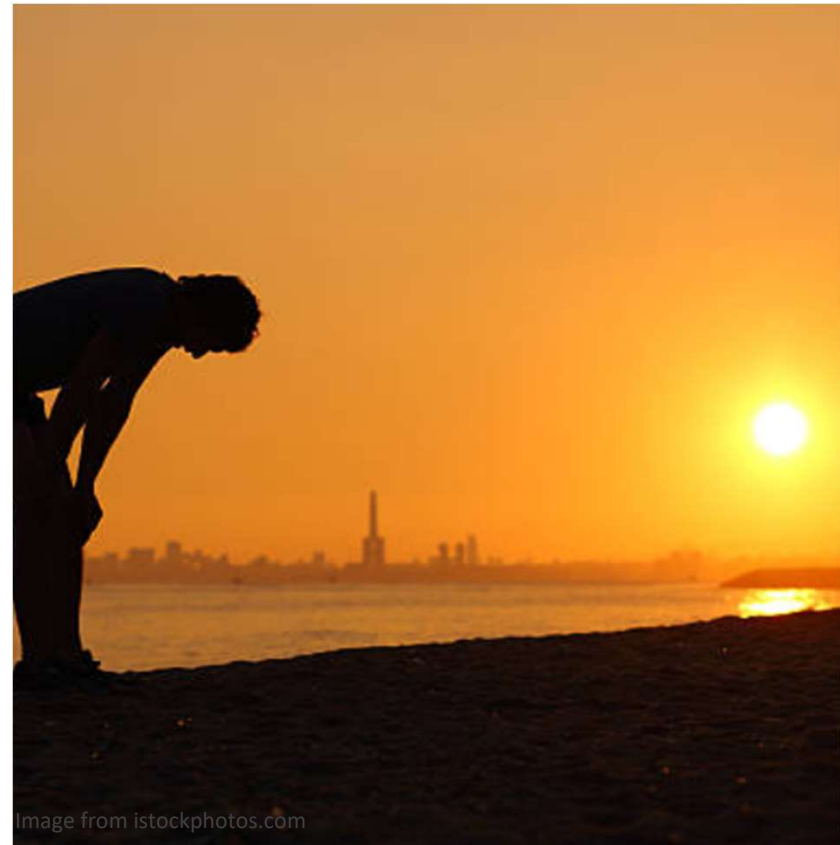
- Call 911
- Get to a cool area
- Drink water unless not responsive, if forced to drink the water can go into the lungs and cause further issues
- Cool down worker (showers, sponge bath, ice packs)



Heat Exhaustion

Symptoms Include:

- Fatigue
- Irritability
- Thirst
- Nausea or Vomiting
- Dizziness or Lightheadedness
- Heavy Sweating
- Elevated Body Temperature
- Fast Heart Rate



Heat Exhaustion Treatment

- Move to cool area
- Rest
- Loosen clothing
- Cool shower, sponge bath, ice packs
- Drink water
- Checked by medical personnel
- Avoid strenuous activity



Heat Cramps

Heat cramps, a type of heat illness that causes muscle spasms that result from loss of large amount of salt and water through exercise. Heat cramps are associated with cramping in the abdomen, arms and calves. This can be caused by inadequate consumption of fluids or electrolytes.



Heat Cramp Treatment

- Get to a cool area
- Rest
- Water every 15-20 minutes
- Eat a salty snack



Heat Syncope

Heat syncope or fainting is a mild form of heat illness that often results from physical exertion when it is hot. It occurs when your body, in an effort to cool itself, causes the blood vessels to dilate to such an extent that blood flow to the brain is reduced. Symptoms include fainting and dizziness.



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Heat Syncope Treatment

- Elevate feet
- Move to a cool area
- Give fluids
- Recovery is usually immediate
- Rest



Heat Rash

Heat rash develops when blocked pores (sweat ducts) trap perspiration under your skin. Symptoms range from superficial blisters to deep, red lumps.



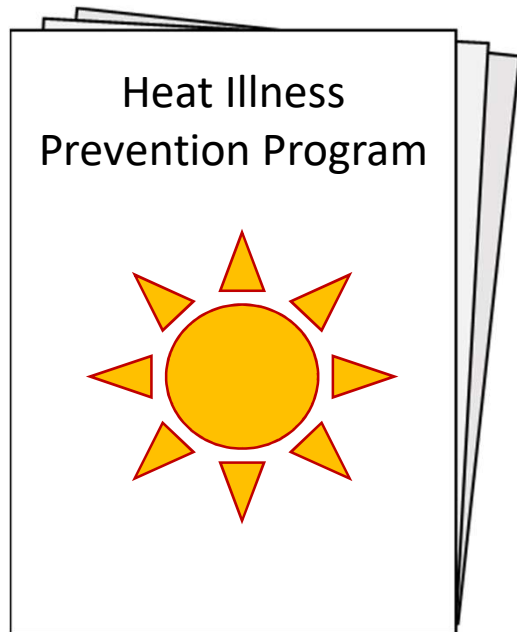
Heat Rash Treatment

- Keep skin cool and dry
- Reduce seating in affected area
- Job reassignment for individuals wearing sweat impermeable clothing



Heat Illness Prevention Program

Heat related illness can affect many different industries, and not just workers who are outside. Some job factors to be aware of that can cause heat illness are: Outdoor work in warm weather, heat sources such as ovens, fires, or hot tar, strenuous physical activity, and heavy or non-breathable work clothes. When these or other heat factors are present, a heat illness prevention plan should be put into place.



When creating the Heat Illness Prevention Plan employers should take the following into consideration,

- Who will provide supervision
- How will new workers develop heat tolerance
- What engineering controls/work practices will be put into place to reduce exposure
- How to respond when there is a heat advisory or heat warning
- What first aid protocols will be put in place
- Training for supervisors and workers



Daily Supervision

Heat conditions can change quickly, and there should be a supervisor located onsite to oversee the heat changes that can happen.



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The individual who will be the heat supervisor must have the proper training. Training includes knowing how to:

- Identify and control heat hazards
- Recognize early symptoms of heat stress
- Administer first aid for heat-related illnesses
- Activate emergency medical services quickly when needed

Ideally, the individual who is responsible for the heat plan should be on-site, where the workers are. On-site monitoring allows accurate determination of heat stress.



Heat Tolerance

Working in the heat can take time to become used to. It is important that new and returning workers are given the time to acclimate to the heat and build up tolerance.



New Employees

To protect new employees from heat illness, employers should ensure that new employees acclimate the heat. To do this employees should:

- Work shorter shifts in the heat and are given breaks
- Trained on heat illness symptoms and the importance of rest and water
- Be monitored closely the first 1-2 weeks of work
- Use the buddy system and are not left to work alone

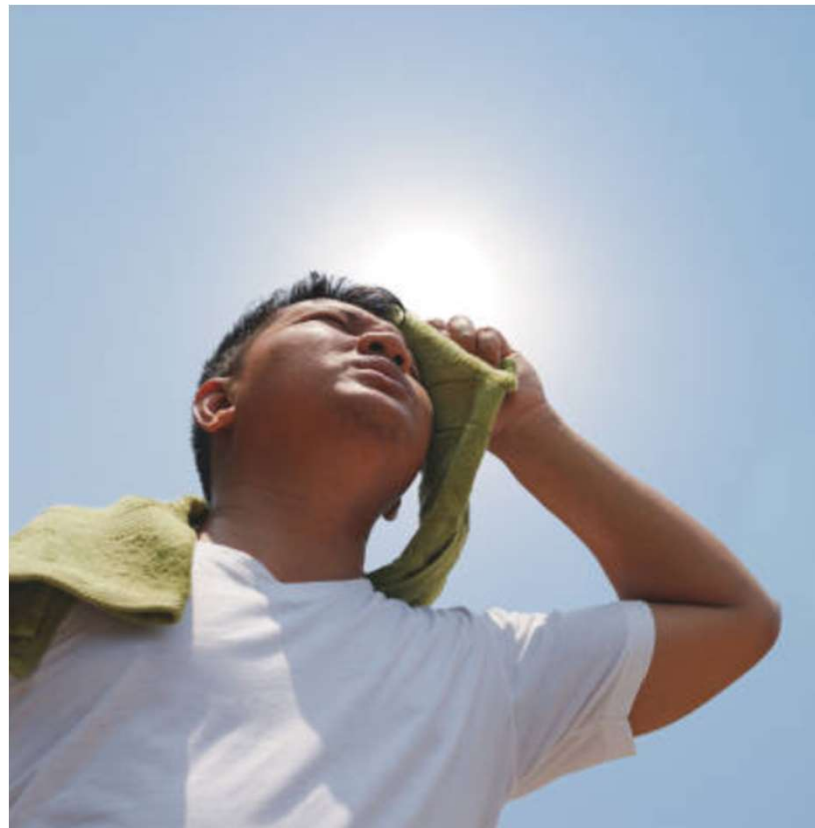
These precautions should be taken for 1-2 weeks.



Not only should new employees be able to acclimate to the heat returning employees need to acclimate as well. Employees who are absent from work due to sick leave or vacation can become unacclimated and are at increased risk of developing heat illnesses.



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Use the Twenty Percent Rule

The twenty percent rule can be used to acclimate both new employees and returning employees. The twenty percent rule is where the employee works a full work load in the heat for twenty percent of the day and then each day twenty percent is added by the end of the first week the employees should be working in the heat for the full workday.



Engineering Controls

The best way to reduce heat when working indoors is to use engineering controls. Examples of ways to do this are:

- Air conditioning
- Increased general ventilation
- Cooling fans
- Local exhaust ventilation at points of high heat production or moisture
- Reflective shields to redirect radiant heat
- Insulation of hot surfaces Elimination of steam leaks
- Cooled seats or benches for rest breaks
- Use of mechanical equipment to reduce manual work
- Misting fans that produce a spray of fine water droplets



Work Practices

When engineering controls cannot be used, the employer will need to change work practices to reduce heat exposure. Some ways to do this are:

- Modify work schedules and activities for workers who are new to warm environment
- Schedule shorter shifts for newly hired workers and unacclimatized existing workers
- Require mandatory rest breaks in a cooler environment
- Consider scheduling work at a cooler time of day.
- Rotate job functions among workers
- Ensure that workers drink an adequate amount of water or electrolyte-containing fluids
- Workers should watch out for each other for symptoms of heat-related illness prepared to administer appropriate first aid to anyone who is developing a heat-related illness
- Administer appropriate first aid to any worker who is developing a heat-related illness
- Implement a buddy system for new workers and in heat stress environments
- Avoid drinking hot beverages during lunch and afternoon breaks



Personal Protective Equipment

In most cases, heat stress should be reduced by engineering controls or work practice modifications. However, in some limited situations, special cooling devices can protect workers in hot environments:

- Insulated suits
- Reflective clothing
- Infrared reflecting face shields
- Cooling neck wraps



First Aid

- If a worker is experiencing any of the symptoms of heat illness, the best thing to do is get them to a cool area (shade or a room with Air Conditioning).



Cooling Techniques

Once in the shade, there are different cooling techniques that can be used.

- Immerse the worker in cold water/ice bath
- Remove heavy layers of clothing and PPE
- Place ice or cold wet towels on the head, neck, trunk, armpits, or groin
- Use fans to circulate the air around the worker



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NEVER leave a worker with heat illness alone, symptoms can rapidly become worse. When in doubt cool down the worker and call 911.



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Water, Rest, Shade

The three biggest things for employers to remember is to provide water, rest, and shade.

- Employers should provide cool water for workers to drink. Proper hydration is key in preventing heat illness. It is also a good idea to provide drinks with electrolytes, because electrolytes are lost when we sweat.
- When heat stress is high, employers should require workers to take breaks. The length and frequency of rest breaks should increase as heat stress rises.
- Workers should be given a cool location where they can take their breaks and recover from the heat.
- Outdoors, this might mean a shady area, an air-conditioned vehicle, a nearby building or tent, or an area with fans and misting devices.
- Indoors, workers should be allowed to rest in a cool or air-conditioned area away from heat sources such as ovens and furnaces.



For additional resources visit
[osha.gov/SLTC/heatstress/index.html](https://www.osha.gov/SLTC/heatstress/index.html)

