

Heat-Related Illnesses

Heat-related illnesses are serious concerns for employees working in hot, humid conditions, particularly when they have a heavy physical workload.

Introduction

Heat-related illness is a serious concern for employees who work outdoors in agriculture, landscaping and construction and indoors in foundries, kitchens, or laundries.

Heat-Related Illnesses

Heat stroke. Heat stroke occurs when the victim's body becomes dehydrated. The body loses its ability to sweat and cool itself. Heat stroke is a life or death medical emergency and must be treated as such.

Heat Stroke symptoms:

- Profuse sweating followed by a complete lack of sweating due to total dehydration.
- Skin that is hot, dry, red, mottled or bluish.
- Disorientation or loss of consciousness
- Nausea, vomiting
- Headache
- May mimic a heart attack due to the profuse sweating, skin color, difficulty breathing, etc.

Heat stroke is a medical emergency. Call 9-1-1 immediately. Move victim to a cool or shaded area. Remove or loosen tight clothing. Soak clothing and skin with cool water, especially the head, armpits and groin. Use a fan to create air movement.

Heat exhaustion. Heat exhaustion is caused by dehydration. This occurs as a precursor to heat stroke and as such must be recognized and treated immediately.

Heat Exhaustion symptoms:

- Fatigue, weakness, dizziness, faintness
- Nausea/vomiting
- Headache
- Moist, clammy skin; pale or flushed
- Rapid pulse

To treat heat exhaustion, have the victim rest in a cool area and drink fluids. If symptoms worsen, call 9-1-1.

Heat cramps. Heat cramps appear to be caused by electrolyte loss through perspiration. Symptoms may include temporary painful muscle spasms or cramps that usually affect the arms, legs, or abdomen during or after hard physical work.

Heat cramps are treated with rest, and hydration with water and electrolyte replacement drinks such as Gatorade.

Heat rash. Heat rash appears as an area of reddened, tiny, raised blisters and usually occur where clothing wet with sweat rubs on the skin. Sweat gland ducts become plugged, leading to inflammation. This is sometimes referred to as "prickly heat." Treat by keeping skin dry and clean.

Preventing heat-related illnesses

Two major means of controlling heat-related hazards are hydration and acclimatization to heat. These are important because they allow the body to cool itself through evaporative cooling.

Hydration. Drinking enough water and electrolytes (ex. Gatorade) prevents dehydration and allows the body to sweat. This is key to preventing heat stress.

Employees should start drinking water before they feel thirsty.

In hot conditions workers should drink at least five to seven ounces of cool water every 15-20 minutes. Have water available.

Don't use salt tablets. They may upset the stomach and cause vomiting, which results in further dehydration.

Acclimatization. A person can increase his or her tolerance to heat through acclimatization, that is the repeated exposure to hot environments.

It usually takes about a week of slowly increasing the hot, humid workloads to fully acclimate. This can be thought of as the '20% Plus' process:

- Start by working in hot, humid conditions for only 20% of the work day.
- Spend 20% more time each day in those conditions. Keep adding 20% time working in hot, humid conditions until the employee can work all day in that environment.

Acclimated workers away from the job for more than a week can acclimate much more rapidly than non-acclimated workers.

Engineering and Administrative Controls and Personal Protective Equipment (PPE)

Employer must implement feasible engineering and administrative controls and provide appropriate PPE when hydration and acclimatization are not enough to prevent heat exposure.

Engineering controls. In the case of heat stress, examples of engineering controls may include adding air conditioning, ventilation, or other means of lowering the air temperature and humidity.

Administrative controls. In the case of heat stress, administrative controls may include:

- Providing additional breaks for employees who work in hot environments.
- Changing the work procedure to reduce heat exposure. This can include job rotation.
- Employee training.

Personal Protective Equipment (PPE). Options for PPE to control heat exposure are limited: ice vests, cooling headbands and similar products.

Training

Supervisors and workers who may be exposed to hot environments must receive training before they are exposed to heat approaching the limits in the heat stress standard. Refresher training must be conducted at least annually.

Training should include applicable legal limits on heat exposure, symptoms of heat-related illnesses, appropriate medical treatment, and precautions or measures to be taken for protection against heat.

Relevant Minnesota OSHA Regulations

Minnesota Rule 5205.0110, subpart 2a is the MN OSHA standard for heat exposure. The standard is based on the wet bulb globe temperature (WBGT) and level of work activity. Minnesota's Employee Right to Know Act (MERTKA) also applies.

Questions

If you have questions on this topic, please contact Health, Safety, and Risk Management at (612)626-6002.