

HEAT STRESS

(For assistance, please contact EHS at (402) 472-4925, or visit our web site at <http://ehs.unl.edu/>)

Working in the heat stresses the body and can lead to illness or even death in severe cases. However, heat illnesses are preventable. This SOP provides guidance on recognizing the signs and symptoms of and avoiding heat stress and illnesses.

Risk Factors

- **Weather Conditions.** The risk of heat stress is relative to temperature, humidity, sunlight, and wind speed. High temperature, high humidity, direct sunlight and low wind speed make the worst combination. If possible, schedule heavy work for the cooler parts of the day.
- **Personal Factors and Physical Demands.** The risk of heat stress increases with physical demands. For example, a worker who is walking is at higher risk than a worker who is riding in a vehicle. A worker who is lifting and carrying heavy items is at the greatest risk. Older workers, obese workers, and persons taking certain types of medication, such as antihistamines, are at a greater risk for heat illness.

Mitigation

- **Acclimation.** Tolerance to the heat can be increased through a process of acclimation that involves short exposures followed by longer periods of work in the hot environment. New employees and workers returning from an absence of two weeks or more should have a 5-day acclimation period. This period should begin with 50 percent of a normal workday on the first day, building up to 100 percent of a normal workday on the fifth day.
- **Appropriate Clothing.** Wear light, loose clothing and a hat. In some cases, personal cooling devices (such as water circulating cooling vests) may be advisable.
- **Hydration.** Pre-hydrate by drinking 8-16 ounces of water *before* working in the heat. Keep water or electrolyte drink within easy reach and consume 4-8 ounces every 15-20 minutes, not just during rest breaks. Avoid alcohol, coffee, tea, or soda, which act as diuretics and further dehydrate the body. Monitor your urine output. Large volumes of relatively clear or light colored liquid indicate proper hydration. Small volumes and/or dark urine probably may be indicators of dehydration.
- **Adequate Rest Periods.** Avoid overexertion; work at a steady pace. Heed the body's signals. Take plenty of breaks in shaded or cool areas.

- **Education.** Workers should recognize the signs and symptoms of heat stress and the proper actions to take, whether experienced personally or observed in co-workers.

SIGNS AND SYMPTOMS	TREATMENT*
<p>Early Heat Illness Mild dizziness, fatigue, or irritability; decreased concentration; impaired judgment.</p>	<ul style="list-style-type: none"> • Loosen or remove clothing. • Rest in shade 30 minutes or more. • Drink water.
<p>Heat Rash Tiny blister-like red spots on the skin; prickling sensations. Commonly found on clothed areas of the body.</p>	<ul style="list-style-type: none"> • Clean the skin and allow it to dry. • Wear loose clothing. • Rest in a cool place.
<p>Heat Syncope Fainting of an un-acclimated worker when standing still in the heat.</p>	<ul style="list-style-type: none"> • Lie down until recovered. • Moving around, instead of standing still, in the heat will reduce recurrence. • Acclimate to heat.
<p>Heat Cramps Painful spasms of the muscles; occurs when workers drink large amounts of water without replacing salts. May occur during or after work hours.</p>	<ul style="list-style-type: none"> • Drink electrolyte liquids (i.e., sports drinks such as Gatorade, Allsport, etc.). • Rest. • Massage affected areas. • May require intravenous salt solutions if determined by a doctor.
<p>Heat Exhaustion Extreme weakness or fatigue, giddiness, nausea, or headache. Moist, clammy skin. Pale or flush complexion. Normal or slightly elevated body temperature.</p>	<ul style="list-style-type: none"> • Rest lying down in a cool place. • Loosen or remove clothing. • Splash water on body. • Massage legs and arms. • If conscious, drink water or an electrolyte solution, but not salt or salt water. • If unconscious, treat for Heat Stroke (below) until proven otherwise. • Severe cases involving workers who vomit or lose consciousness may require longer treatment under medical supervision. • Medical personnel should evaluate workers who collapse.
<p>Heat Stroke Often occurs suddenly. Sweating stops. Mental confusion, very aggressive behavior, delirium, loss of consciousness, convulsions, or coma. Fast pulse. Rapid breathing. Body temperature of 106° F or higher. Hot, red skin that may be red, mottled, or bluish. Worker may resist treatment.</p>	<ul style="list-style-type: none"> • Summon medical assistance. • While awaiting medical help, remove victim to cool area, soak clothing with cool water, fan vigorously to increase cooling, and elevate legs. Treat for shock, if required, after temperature drops. • If conscious, have victim drink as much water as possible. • Prompt first aid can prevent permanent injury to the brain and other vital organs.

* Sources: A Guide to Heat Stress in Agriculture (EPA); Protecting Workers in Hot Environments (OSHA); Occupational Health & Safety magazine (May 2000).