

Working Outdoors in the Heat

Whether you work outdoors in agriculture, construction, coaching, or some other capacity, caution should be taken when temperatures rise. Asphalt and concrete store heat longer and gradually release heat at night, making road work extremely hot. Strenuous activity in the heat causes the body to sweat in an effort to cool itself. When sweat evaporates, the body begins to cool. A pea-sized bead of sweat can cool nearly 1 liter (about 1 quart) of blood by 1 °F. In hot, humid conditions, however, evaporation of sweat becomes more difficult, and keeping the body's temperature regulated can become a problem if precautions are not taken.

If you or your employees work in the outdoor heat, take these safety precautions:

Get acclimated to the heat. If you have just begun summer work, returned from a vacation, or had an extended illness, it is important to begin work gradually. It will take an adult about 5-7 days to acclimate to the heat.

Implement work-rest cycles. Distribute the workload evenly over the day and amongst able

workers with adequate rest periods. Do **not** increase the duration of rest periods in hopes of increasing the duration of work periods - this can result in heat illness. Short, but frequent, work-rest cycles are the greatest benefit to the worker.

Provide cool rest areas. Shaded or air conditioned areas with a temperature of 76 °F are preferable. The rest area should be as close to the work area as possible.

Drink 1/2 cup to 1 cup of cool water every 15 to 20 minutes. For work longer than 1 hour in duration, an electrolyte-containing sports drink may be preferred to replace lost nutrients. To prevent dehydration, it is crucial that the water intake during the workday be about equal to sweat loss. Do not rely on thirst as a measure of the need for fluid. A worker may produce 2 to 3 gallons of sweat over the course of a day.

Wear appropriate clothing. Clothing helps to prevent the transfer of heat from the air to the body. This advantage may be nullified, however, if the clothes interfere with the evaporation of sweat, such as in humid environments. In most cases, the best choice is to wear light-weight (like cotton), loose-fitting, light-colored clothing and a hat with a wide brim to protect the face and neck.

Work in pairs. Each person should have a partner whose job is to check on the other to watch for signs of heat illness.

Postpone nonessential tasks. When feasible, the most stressful tasks should be performed during the cooler parts of the day (early morning or at night). Double shifts and overtime should be avoided whenever possible during high temperature conditions.



Educate employers and workers. Both employers and workers should know the hazards of working in the heat, the benefit of implementing the above guidelines, as well as the signs and symptoms of heat illness.

For more information on heat and heat illness, see the *HealthHints* newsletter on this topic at http://fcs.tamu.edu/health/Health_Education_Rural_Outreach/index.php.



References:

Centers for Disease Control (2006). Extreme heat: A prevention guide to promote your personal health and safety. Retrieved August 25, 2006. From http://www.bt.cdc.gov/disasters/extremeheat/heat_guide.asp.

Federal Emergency Management Agency (2006). Are you ready? Extreme heat. Retrieved August 24, 2006. From <http://www.fema.gov/areyouready/heat.shtm>.

Mayo Clinic (2004). Sweating and body odor. Retrieved August 24, 2006. From <http://mayoclinic.com/health/sweating-and-body-odor/DS00305>.

National Institute for Occupational Safety and Health (1996). Working in hot environments. Retrieved September 6, 2006. From <http://www.cdc.gov/niosh/hotenvot.html>.

Signs of Heat Illness

Excessive exposure to a hot environment, especially while active or working, can bring about a variety of heat-induced disorders, which can be very serious - potentially causing permanent disability or death.

Heat exhaustion is the most common heat illness and often comes on suddenly. It is caused by decreased blood volume due to dehydration. Symptoms may include:

- Dizziness/feeling faint
- Headache
- Nausea
- Profuse sweating
- Clammy/cool skin
- Rapid/weak pulse
- Body temperature at or below normal
- Low grade fever
- Low blood pressure
- Ashen/pale appearance.

If left unattended, heat exhaustion can result in the more disabling and deadly heat stroke.

Heat stroke occurs when the body is unable to regulate its temperature and cool down. Body temperature may rise to 106 °F or higher within 10 to 15 minutes. Warning signs vary, but may include:

- An extremely high body temperature (above 103 °F, orally)
- Red, hot, and dry skin
- No sweating
- Rapid, strong pulse or heartbeat
- Rapid, shallow breathing
- Elevated or lowered breathing
- Throbbing headache
- Dizziness
- Nausea
- Confusion
- Irritability
- Unconsciousness.