safety focus

Heat Stress

Operations involving high air temperatures, radiant heat sources, high humidity, direct physical contact with hot objects, or strenuous physical activities have a high potential for inducing heat stress in employees engaged in such operations. Age, weight, degree of physical fitness, degree of acclimatization, metabolism, use of alcohol or drugs, and a variety of medical conditions such as high blood pressure, all affect a person's sensitivity to heat.

Safety Hazards

Certain safety problems are common to hot environments. Heat tends to promote accidents due to the slipperiness of sweaty palms, dizziness, or the fogging of safety glasses. Wherever working with steam, the possibility of burns from accidental contact also exists.

Aside from these obvious dangers, the frequency of accidents, in general appears to be higher in hot environments than in more moderate environmental conditions. One reason is that working in a hot environment lowers the mental alertness and physical performance of an individual.

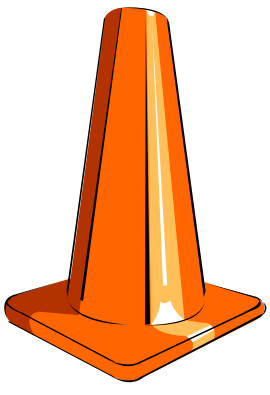
Increased body temperature and physical discomfort promote irritability, anger, and other emotional states that sometimes cause workers to overlook safety procedures or to divert attention from hazardous tasks.

Health Hazards

- **Heat Stroke –** This can occur when body temperature regulation fails, and body temperature rises to critical levels. This condition is caused by a combination of factors, and its occurrence is difficult to predict. **Heat stroke is a medical emergency, and professional medical treatment should be obtained immediately if a worker shows signs of possible heat stroke!**

  Signs and symptoms of heat stroke include: oral temperature over 103ºF, no sweating, confusion, irrational behavior, loss of consciousness, convulsions, hot, dry skin, headache, dizziness, and nausea. If body temperature rises too high, it causes death.

  Regardless of the worker's protests, no employee suspected of being ill from heat stroke should be sent home or left unattended unless a physician has specifically approved such an order.



- **Heat Exhaustion** - Signs and symptoms of heat exhaustion include oral temperatures over 101ºF, headache, nausea, vertigo, weakness, thirst, and giddiness. This condition responds readily to prompt treatment, however

heat exhaustion should not be dismissed lightly. Workers suffering from heat exhaustion should be removed from the hot environment and given fluid replacement. They should also be encouraged to get adequate rest.

- **Heat Cramps** - These are usually caused by performing hard physical labor in a hot environment. Cramps appear to be caused by the lack of water replenishment. Thirst cannot be relied on as a guide to the need for water; instead, water must be consumed at regular intervals in hot environments.

  Under extreme conditions, such as working for 6 to 8 hours in extreme environments, drinking commercially available "sports drinks" is beneficial to recovery.

- **Heat Rash –** This is also known as prickly heat, is the most common problem in hot work environments. It may occur where sweat is not easily removed from skin surfaces or where clothing is restrictive. As sweating increases, these bumps give rise to a prickling sensation. In most cases, heat rashes will disappear when the affected individual returns to a cool environment.

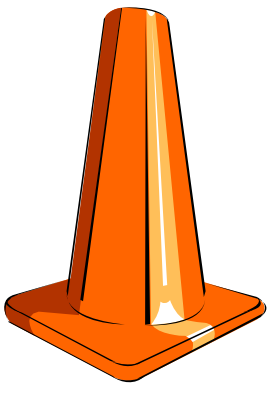
- **Heat Fatigue** - The signs and symptoms of heat fatigue include impaired performance of skilled motor, mental, or vigilance jobs. There is no treatment for heat fatigue except to remove the heat stress before a more serious heat-related condition develops.

First Aid

If any of the above symptoms are noted, the person should be placed in a cool, shaded area and outer clothing should be removed. Skin should be wetted and surrounding air movement should be increased to improve evaporative cooling until the seriousness of the condition can be assessed.

If medical attention is required, contact Public Safety via radio or by calling 4-4444.

If medical attention is **not** necessary, continue cooling the person and replace fluids gradually. It takes at least 30 minutes to cool the body once a person has become overheated.



Prevention

- Work/rest schedule. Periods of work should be interspersed with rest periods to allow for fluid replacement and body cooling. Typical work/rest intervals are 30 minutes working: 10 minutes resting. Cool, shaded rest areas are preferred.

- **Air circulation.** Ventilation in the work area should be increased via use of fans or air conditioning.

- **Liquid replacement.** Chilled water should be made available and its consumption should be encouraged at least during every rest period. For work of long duration, "sports"-style drinks may be beneficial in decreasing recovery times. As much as 1 quart of fluid per hour may be consumed during active work.

- **Wet clothing.** Additional cooling may be achieved by wetting clothing with water, at convenient intervals, to increase evaporative cooling.

Employee Responsibilities

- Carry out instructions and training for controlling heat stress;
- Be alert for symptoms in themselves and others; and
- Drink enough water/fluids.

Environmental Health and Radiation Safety (503 494-7795) has experts in heat stress prevention xwho can answer questions and/or provide necessary monitoring.