

PREVENTING HEAT INJURIES

1. General. Heat injury and illness pose a significant threat to our Soldiers. Heat casualties, both in garrison and in the many areas of operations where Soldiers are deployed, represent serious threats to successful mission accomplishment. USAREUR Soldiers are currently serving in some of the hottest areas of the world.

2. Impact. Heat injuries mean the loss of productive Soldiers and long-term, permanent profiles. Heat injuries also can lead rapidly to death or permanent disability. Heat injury occurs when the body no longer can maintain its normal temperature range. Troops are at greatest risk at the beginning of the heat season. Heat injury is always preventable by individual action and command intervention. Therefore, it is critical that Soldiers and leaders be able to recognize when heat injury is possible or when it is developing.

3. Prevention. Procedures for dealing with heat stress for office workers is covered by Army in Europe policy available on the USAREUR Safety website.

a. The Human Body. The human body maintains a narrow temperature range. When exposed to hot environments or increased heat loads (working in hot environments or wearing heavy equipment) the body will increase sweating to get rid of the heat. The body can sweat up to 2 liters per hour for short periods. Sweating will stop with continuing heat loads and inadequate fluid replacement. Eventually, no more heat can dissipate through sweating and the core temperature of the body rises. This, along with a decreased blood flow in one's blood vessels due to fluid losses (sweat, breathing, urination), increases the Soldier's risk for heat injury.

b. Heat Injuries. Heat injuries have a range of signs and symptoms relating to underlying physical damage, from mild heat cramps to serious heat stroke.

- **Heat Cramps.** Heat cramps are painful contractions of the muscles in the abdomen, back, or legs that may occur from working in a hot environment. These cramps may be related to salt loss due to sweating and can occur while working or 1 or 2 hours after the work ends.
- **Heat Exhaustion.** Heat exhaustion is more serious than heat cramps. Signs and symptoms of heat exhaustion include chills, dizziness, fatigue, headache, nausea, and vomiting.
- **Heat Stroke.** Heat stroke is the most serious heat injury and is a medical emergency. Signs of heat stroke are similar to those for heat exhaustion, except that the individual also may show signs of agitation and confusion, and may lose consciousness. Heat stroke can lead to death because of elevated body temperature, metabolic disturbances, and kidney failure.

c. Acclimation. The human body can acclimatize to working in hot environments. This process generally takes about 2 weeks of daily exposure to heat and adequate

hydration. Acclimatization results in a more effective sweating process in which the Soldier starts to sweat at a lower temperature and the sweat contains less salt. This results in earlier, more efficient cooling and increased blood volume that helps to maintain normal body function. Individual fluid requirements for each Soldier are increased in hot environments even after acclimatization.

d. Command Emphasis. Heat injuries can be prevented by educating Soldiers and leaders, applying the risk-management process, and by command influence. Remember the acronym H-E-A-T when training in hot weather (H: heat category; E: exertion level; A: acclimatization; T: time of heat exposure and recovery time). A risk-management guide to preventing heat casualties is available on the USAREUR Safety website.

(1) Leaders need to ensure adequate water intake of all Soldiers by allowing them time to drink and urinate during work periods. Soldiers need to drink even if they do not feel thirsty. The thirst mechanism is not activated until the body is dehydrated to the point where the Soldier is at least “a quart low.” This corresponds to a 1-liter deficit. Soldiers need to eat their field rations (including the salt packets). This provides for enough salt and calorie intake to replace that which is lost during sweating. The skin is an essential organ for proper temperature regulation. Prevention of sunburn by using sunscreen and proper wearing of uniform while in the sun is necessary.

(2) Leaders need to follow the work and rest cycles that are determined by the wet bulb globe temperature (WBGT) index for their particular environmental location. Accurate index readings from the WBGT require readings be taken from troop locations. Each unit is required to have a WBGT kit (national stock number (NSN) 6665-00-159-2218) and field sanitation standing operating procedure for this purpose.

(3) Leaders must provide adequate rest cycles and shade. The body can absorb a maximum of 1.5 liters of water per hour. Under extreme environmental conditions, a person can lose over 2 liters of water per hour from sweating. Therefore, Soldiers can become progressively dehydrated unless they are allowed to cool off and reduce their body temperature. This is accomplished by providing adequate rest cycles and shade.

(4) Unit field sanitation teams (FSTs) are trained to provide heat-injury prevention and awareness classes to leaders and Soldiers. FSTs also are trained and equipped with a WBGT to monitor heat conditions and advise unit commanders regarding water requirements and work-rest cycles.

4. Training. Heat-injury prevention training will be accomplished by 31 May 2004. The training video “Heat Injury Risk Management”(PIN #711658) is available from your local training and audiovisual support center (TASC). This video should be shown to all Soldiers. A training presentation also is available on the USAREUR Safety website.