

How Heat Effects the Body

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OBJECTIVES

Upon completion of this safety talk, participants will be able to:

- *Understand how heat adversely affects their bodies*
- *Know the conditions associated with working in hot weather and their symptoms*

Your body temperature is meant to remain fairly constant no matter what is happening outside the body. To prevent the body from overheating, excess heat must be removed. This includes heat from the higher temperatures and heat generated from working. This removal is an automatic response that turns on when the body temperature is higher than 98.6° F.

Cooling begins by sending more blood to the skin's surface. It allows heat to be transferred from the body to the cooler air. If not enough heat is lost, the sweat glands begin producing and releasing sweat. The evaporation of sweat cools the skin and the body. When the air temperature gets close to body temperature this cooling system doesn't cool the body efficiently. Sweating is the only way to effectively cool the body. On days with high humidity, even sweating doesn't work well. When high temperature and high humidity are combined, a worker's ability to get tasks done is reduced. Since so much blood goes to the skin to cool the body, there is less blood for muscles, the brain and other vital organs. This will result in a decrease in overall strength. This causes fatigue to set in much sooner than in cooler conditions. This is accompanied by a lowering of alertness, mental ability and ability to concentrate, which is likely to increase the potential for accidents. Heat also increases the slipperiness of sweaty hands, dizziness, and decreases mental alertness and physical performance. The increase in body temperature and physical discomfort increases irritability, anger and emotional states. Workers overlook safety procedures and practices, as well as miss potentially hazardous situations.

Most heat-related health problems result from how well the body can process this excess heat. Heat stroke is the most serious health issue that results from hot weather. It occurs when sweating no longer effectively reduces body temperature. The situation can reach crisis level quickly and with little warning. Someone with heat stroke will have skin that appears hot, dry, red or spotted. The body temperature will reach 105° F or higher causing the victim to become mentally confused, delirious, sometimes convulsing or unconscious. Without immediate medical treatment brain damage or death can occur.

Heat exhaustion can appear similar to the early symptoms of heat stroke. It is caused by dehydration and salt loss from excessive sweating. Unlike heat stroke, a worker with heat exhaustion will still sweat, will have clammy, moist, pale or perhaps flushed skin. The body temperature remains near normal, but the worker will experience extreme weakness or fatigue, giddiness, nausea or headache. Resting in a cool place and drinking plenty of liquids can reverse this. Dehydration and salt loss can also cause painful heat cramps. Low salt levels in the muscles will cause cramping. Tired muscles (those used in doing the work) are most likely to cramp, but muscles of the legs, arms or abdomen can also be affected.

Heat can also cause less serious issues when working in hot conditions. To one not used to working in a hot environment, fainting and heat fatigue are possibilities. When large amounts of blood are sent to the skin for cooling less blood will be pumped to the brain. This can cause fainting to occur. Lying down will send blood back throughout the body and will end the fainting episode. Heat fatigue is discomfort and strain from prolonged heat exposure. It can be lessened with gradual adjustment to heat. Anyone suspected of suffering from any of these heat related problems should be taken seriously and treated promptly to reduce any further injury.

DISCUSSION QUESTIONS

- How does the body prevent heat from building up in hot weather?
- Why does extremely hot weather increase the potential for accidents?
- What are the symptoms of heat stroke?
- What are effective ways to deal with heat-related conditions?