

## How Your Body Handles Heat

The human body, being warm blooded, maintains a fairly constant internal temperature, even though it is being exposed to varying environmental temperatures. To keep internal body temperatures within safe limits, the body must get rid of its excess heat, primarily through varying the rate and amount of blood circulation through the skin and the release of fluid onto the skin by the sweat glands. These automatic responses usually occur when the temperature of the blood exceeds 98.6°F and are kept in balance and controlled by the brain.

During this process of lowering internal body temperature, the heart begins to pump more blood, blood vessels expand to accommodate the increased flow, and the microscopic blood vessels - called capillaries - thread through the upper layers of the skin and begin to fill with blood. The blood then circulates closer to the surface of the skin, and the excess heat is lost to the cooler environment.

If heat loss from increased blood circulation through the skin is not adequate, the brain continues to sense overheating and signals the sweat glands in the skin to shed large quantities of sweat onto the skin surface. Evaporation of sweat cools the skin, eliminating large quantities of heat from the body.

As environmental temperatures approach normal skin temperature, cooling of the body becomes more difficult. If air temperature is as warm as or warmer than the skin, blood brought to the body surface cannot lose its heat. Under these conditions, the heart continues to pump blood to the body surface, the sweat glands pour liquids containing electrolytes onto the surface of the skin and the evaporation of the sweat becomes the principal effective means of maintaining a constant body temperature. Sweating does not cool the body unless the moisture is removed from the skin by evaporation.

Under conditions of high humidity, the evaporation of sweat from the skin is decreased and the body's efforts to maintain an acceptable body temperature may be significantly impaired. These conditions adversely affect an individual's ability to work in the hot environment. With so much blood going to the external surface of the body, relatively less goes to the active muscles, the brain and other internal organs; strength declines and fatigue occurs sooner than it would otherwise. Alertness and mental capacity also may be affected. Those who must perform delicate or detailed work may find their accuracy suffering, and others may find their comprehension and retention of information lowered.

Source: National Institute for Occupational Safety and Health

### QuickTakes

#### Headache Triggers



Although many sufferers have a family history of migraine, the exact hereditary nature is still unknown. It

appears that a person is probably born with the potential for migraines, and the headache is triggered by things that have no apparent effect on others.

This list includes some of the common triggers that are dietary, environmental and hormonal. Other triggers include excessive exercising, exercising in hot weather and a change in sleep patterns, such as napping, oversleeping and too little sleep.

#### Other Migraine Triggers:

- Alcohol
- Tyramine
- Chocolate
- Nitrites, MSG, Aspartame
- Caffeine
- Medications
- Weather Changes
- High Altitudes
- Bright Lights
- Loud Noises
- Pollution and Odors
- Stress

# Health Problems Related To Heat

*Excessive exposure to a hot work environment can bring about a variety of heat-induced disorders*

## HEAT STROKE

Heat stroke is the most serious of health problems associated with working in hot environments. It occurs when the body's temperature regulatory system fails and sweating becomes inadequate. The body's only effective means of removing excess heat is compromised with little warning to the victim that a crisis stage has been reached.

## HEAT EXHAUSTION

Heat exhaustion includes several clinical disorders having symptoms which may resemble the early symptoms of heat stroke. Heat exhaustion is caused by the loss of large amounts of fluid by sweating, sometimes with excessive loss of salt. A worker suffering from heat exhaustion still sweats but experiences extreme weakness or fatigue, giddiness, nausea, or headache. In more serious cases, the victim may vomit or lose consciousness.

## HEAT CRAMPS

Heat cramps are painful spasms of the muscles that occur among those who sweat profusely in heat, drink large quantities of water, but do not adequately replace the body's salt loss. The drinking of large quantities of water tends to dilute the body's fluids, while the body continues to lose salt. Shortly thereafter, the low salt level in the muscles causes painful cramps. The affected muscles may be part of the arms, legs, or abdomen, but tired muscles (those used in performing the work) are usually the ones most susceptible to cramps.

## HEAT RASH

Heat rash, also known as prickly heat, is likely to occur in hot, humid environments where sweat is not easily removed from the surface of the skin by evaporation, and the skin remains wet most of the time. The sweat ducts become plugged, and a skin rash soon

appears. When the rash is extensive or when it is complicated by infection, prickly heat can be very uncomfortable and may reduce a worker's performance. The worker can prevent this condition by resting in a cool place part of each day and by regularly bathing and drying the skin.

## TRANSIENT HEAT FATIGUE

Transient heat fatigue refers to the temporary state of discomfort and mental or psychological strain arising from prolonged heat exposure. Workers unaccustomed to the heat are particularly susceptible and can suffer, to varying degrees, a decline in task performance, coordination, alertness, and vigilance. The severity of transient heat fatigue will be lessened by a period of gradual adjustment to the hot environment (heat acclimatization).

*Source: National Institute for Occupational Safety and Health*

## Cool Cucumber Quencher

Makes: 1-2 servings

Try this as a cold soup or a chilled drink!

### Ingredients:

2 cups diced, seedless cucumbers\*  
(about 2 medium)  
2 tbsp. (tightly-packed) finely-minced fresh cilantro  
1/3-1/2 cup non- or low-fat buttermilk  
1/3-1/2 cup non-fat plain yogurt  
Salt and white pepper, if desired

\* If the skin is thin, cucumbers do not need to be peeled.



### Preparation:

1. Place cucumbers, cilantro and half the buttermilk in a blender.
2. Purée until smooth. Blend in remaining buttermilk and yogurt, according to desired consistency, until smooth.
3. Add salt and pepper to taste, as desired. Chill before serving.

### Nutritional Information (per serving):

48 Calories; <1g Fat; <1g Saturated Fat; 4g Protein;  
8g Carbohydrates; 1g Fiber; 67mg Sodium