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## Training Module: Heat Stress

**Objective:** To be able to identify symptoms of heat stroke and exhaustion, and know the emergency procedures for both.

**Trainer's Note:** Heat stress is serious. Discuss measures that could prevent farm work related heat stress. Controlling heat stress is especially important to pesticide handlers and "early entry" workers who must wear protective gear, but heat stress can effect anyone!

### Background

Heat stress is a buildup of body heat generated either internally by muscle use or externally by the environment. Heat exhaustion and heat stroke result when the body is overwhelmed by heat. As the heat increases, body temperature and the heart rate rise painlessly. An increase in body temperature of two degrees Fahrenheit can affect mental functioning. A **five degree Fahrenheit** increase can result in serious illness or death. During hot weather, heat illness may be an underlying cause of other types of injuries, such as heart attacks, falls and equipment accidents. More Worker's Compensation claims for heat illness come from agricultural workers than from any other occupation.

The most serious heat related illness is heat stroke. The symptoms are confusion, irrational behavior, convulsions, coma, and death. While over 20% of heat stroke victims die regardless of health or age, children seem to be more susceptible to heat strain than adults. In some cases, the side effects of heat stroke are heat sensitivity and varying degrees of brain and kidney damage.

#### Preventing heat stress will:

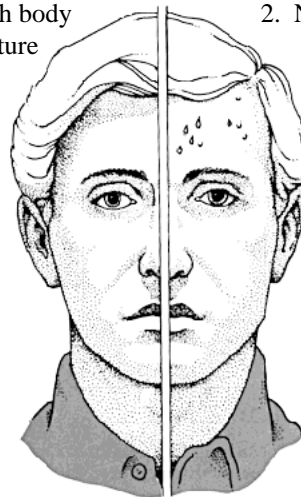
- Protect Health - Heat illness is preventable and treatable before it is life threatening.
- Improve Safety - Any heat stress can impair functioning.
- Increase Productivity - People work slower and less efficiently when they are suffering from heat stress.

#### Heat Stroke

1. Dry, hot skin
2. Very high body temperature

#### Heat Exhaustion

1. Moist clammy skin
2. Normal or subnormal temperature



Signs and symptoms of heat stroke and heat exhaustion

Employers, supervisors and workers all have an essential role to play in preventing heat stress. Each member of the team should use good judgment to prevent heat related illness. A heat stress control program should protect all workers at the operation, from those who can work comfortably in heat to those in poor physical shape.

#### Key elements for controlling heat stress are:

- Drink one glass of water every 15 to 30 minutes worked, depending on the heat and humidity. This is the best way to replace lost body fluid.

- Read medication labels to know how cause the body to react to the sun and heat.
- Avoid alcohol and drugs as they can increase the effects of heat.
- Build up tolerance for working in the heat. Heat tolerance is normally built up over a one to two week time period.
- Take breaks to cool down. A 10 - 15 minute break every two hours is effective.
- Adapt work and pace to the weather.
- Provide heat stress training to workers and supervisors.
- Manage work activities and match them to employees' physical condition.
- Use special protective gear, such as cooling garments and cooling vests on "early entry" workers.
- Know heat stress first aid techniques.

### Heat stroke first aid:

- Move the victim to a cool place. Remove heavy clothing; light clothing can be left in place.
- Immediately cool the victim by any available means. Such as placing ice packs at areas with abundant blood supply (neck, armpits, and groin). Wet towels or sheets are also effective. The cloths should be kept wet with cool water.
- To prevent hypothermia continue cooling the victim until their temperature drops to 102 degrees Fahrenheit.
- Keep the victim's head and shoulders slightly elevated.
- Seek medical attention immediately. All heat stroke victims need hospitalization.
- Care for seizures if they occur.
- Do not use aspirin or acetaminophen.



### Heat exhaustion first aid:

- Move the victim to a cool place.
- Keep the victim lying down with legs straight and elevated 8-12 inches.
- Cool the victim by applying cold packs or wet towels or cloths. Fan the victim.
- Give the victim cold water if he or she is fully conscious.
- If no improvement is noted within 30 minutes, seek medical attention.

When possible, schedule heavy tasks and work requiring protective gear for cooler, morning or evening hours. Prolonged, extreme hot temperatures mandate the postponement of nonessential tasks.

Most protective garments limit sweat evaporation (but not sweat production) and chemical-resistant suits can cause rapid dehydration if sweat is not replaced. One way to slow the buildup of heat when wearing PPE is to use special cooling garments.

- **If the temperature is above 70 degrees Fahrenheit:** Cooling vests may be useful when pesticide handlers are wearing chemical-resistant suits and are either doing heavy or moderate work for a prolonged period.
- **If the temperature is above 80 degrees Fahrenheit:** Working in chemical-resistant suits for more than a half hour without taking frequent water and rest breaks is unsafe. Cooling garments and frequent breaks are recommended.

Powered air-purifying respirators and supplied-air respirators generally feel cooler than other types of respirators because breathing resistance is minimized and the airstream has a cooling effect.

### Review The Following Points

- Heat stress is serious and should be handled as such.
- As strain from heat increases, body temperature and heart rate can rise rapidly.
- Exposure to heat can be serious to children and adults.
- Have plenty of liquids available and administer first aid as needed.

### True or False Answer Key

1. T, 2. T, 3. F, 4. T, 5. T

**True or False**

**Name** \_\_\_\_\_

- |  |   |   |
|--|---|---|
| 1. The illness caused by heat stress is very real.                               | T | F |
| 2. Heat stress may result from the buildup of muscle generated heat in the body. | T | F |
| 3. Exposure to heat stress is not a problem with children.                       | T | F |
| 4. The most serious heat related illness is heat stroke.                         | T | F |
| 5. Over 20% of those who suffer a heat stroke die.                               | T | F |