

WORKING SAFELY IN HOT ENVIRONMENTS

This easy-to-use Leader's Guide is provided to assist in conducting a successful presentation. Featured are:

INTRODUCTION: A brief description of the program and the subject that it addresses.

PROGRAM OUTLINE: Summarizes the program content. If the program outline is discussed before the video is presented, the entire program will be more meaningful and successful.

PREPARING FOR AND CONDUCTING THE PRESENTATION: These sections will help you set up the training environment, help you relate the program to site-specific incidents, and provide program objectives for focusing your presentation.

REVIEW QUESTIONS AND ANSWERS: Questions may be copied and given to participants to document how well they understood the information that was presented. Answers to the review questions are provided separately.

ATTENDANCE RECORD: Document the date of your presentation as well as identify the program participants. The attendance record may be copied as needed.

INTRODUCTION

Anytime high temperatures are combined with intense physical activity, the human body can experience various heat-related illnesses. These illnesses are generally referred to as heat stress and include heat rash, heat cramps, heat exhaustion and heat stroke. This program shows viewers how to prevent and respond to various heat-related problems by using prevention techniques; how to recognize the signs and symptoms of heat stress; and, what first aid procedures to administer when assisting victims of specific heat-related illnesses. Featured are several heat-related illness scenarios that illustrate the importance of staying alert, using good judgment and knowing the warning signs of heat stress when working in hot environments.

Topics include the body's response to heat; causes and prevention of heat rash and heat cramps; and, the dangers, symptoms and first aid treatments associated with heat exhaustion and heat stroke. Becoming acclimated to hot environments and general precautions for preventing heat stress are also covered in the program.

PROGRAM OUTLINE

HOW THE HUMAN BODY RESPONDS TO HEAT

- When it comes to heat-related incidents, our main goal is prevention. To help prevent heat stress, we need to understand how the body responds to heat.
- When exposed to various temperatures, your body continually adjusts to maintain a constant internal temperature. To do this, your body gets rid of excess heat by varying the amount of blood circulating to the skin.
- When blood circulates closer to the skin, it allows excess heat to escape from the body. This is why your skin may appear flushed as you become hot.
- When increased blood flow to the skin doesn't effectively cool the body, fluids are released onto the skin by sweat glands. As sweat evaporates from our skin, it eliminates large amounts of heat, cooling the body and regulating its temperature.
- When these processes work properly, the body can regulate its internal temperatures in a variety of extreme conditions; however, when these processes are impeded or fail to regulate temperature effectively, we begin to experience the symptoms of heat stress.

- For sweating to be effective at cooling the body, the sweat must be able to evaporate. Certain conditions, such as high temperatures or a high level of humidity, make it difficult for the evaporation process to occur.
- When sweat cannot evaporate from the skin, blood flow continues to increase toward the skin's surface in an effort to cool the body.
- When this happens, other areas of your body, including major muscle groups and the brain, can be deprived of adequate blood supply.
- This leads to some of the early signs of heat stress: general fatigue and loss of muscle strength. In addition, mental capabilities such as emotion, comprehension and judgment can be affected.

HEAT RASH

- One common heat-related problem is heat rash, also known as prickly heat. When sweat remains on the skin for extended periods of time, the sweat ducts can become clogged. This can lead to heat rash.
- The rash appears suddenly and is accompanied by a hot, prickly sensation. Besides being uncomfortable, the rash also lowers our ability to tolerate heat by reducing the ability to sweat.
- To prevent the development of such rashes, take periodic rest breaks in cooler areas to allow sweat to evaporate and your body to cool off.

HEAT CRAMPS

- Heat cramps are another problem associated with heat. They usually occur after prolonged heat exposure and periods of very heavy sweating.
- Heat cramps are painful muscle spasms of the abdomen and other voluntary muscles. They can occur when our bodies lose too much salt and other minerals through profuse sweating.
- In extreme conditions, drinking water alone will not keep the salt and other mineral supply replenished enough to prevent heat cramps.
- In conditions where you experience prolonged heat exposure and profuse sweating, drinking sports drinks or other specially-formulated fluids containing sodium chloride can help prevent heat cramps and replenish your body.

BECOMING ACCLIMATED TO THE HOT CONDITIONS

- People who aren't accustomed to working in hot conditions for long periods of time often experience a state of discomfort or mental strain when first exposed. This is the normal body reaction when first exposed to hot conditions.
- In a process known as acclimating, the body becomes slowly accustomed to the heat, leading to an improvement in comfort level.
- If you are new to working in hot conditions, be sure you keep your supervisor of any problems you experience while acclimating to the heat.
- Once acclimated, you will be able to perform your job with more comfort and less strain on your body.
- Keep in mind that you may have to re-acclimate yourself to extreme conditions after spending time away from work.

PRECAUTIONS FOR PREVENTING HEAT STRESS

- Avoid eating large meals immediately before reporting for work in a hot environment. In addition, you should also avoid caffeine and alcohol as they are diuretics that can cause your body to lose water.
- While working in hot environments, you can lose as much as a quart of water per hour. To prevent dehydration, you should try to drink as much liquid as you lose whether you are thirsty or not.
- In moderate heat conditions, drinking plenty of water combined with periodic rest breaks in a cool area is all you need to prevent heat-related problems.
- Try not to wear hot clothing. Lightweight and light-colored cotton clothing reflect heat and provide good air flow for evaporation.
- Increasing your overall level of physical fitness with a proper diet and exercise can also play a key role in your ability to tolerate heat.

HEAT EXHAUSTION

- Heat rash and heat cramps are serious conditions related to exposure to hot environments, but they aren't usually fatal. Heat exhaustion and heat stroke, on the other hand, can be quite deadly.
- Heat exhaustion may be brought on by physical exertion in hot environments. In these conditions, profuse sweating leads to a loss of fluids, allowing the victim to become dehydrated in addition to a loss of salt and other minerals.
- Symptoms of heat exhaustion include profuse sweating, rapid breathing and blurred vision. The victim's skin may be moist and cool to the touch and the pulse is usually weak.
- When approached, victims of heat exhaustion often argue that they are okay because the condition affects their judgment.
- If you encounter someone in this condition, you must seek medical attention immediately. These symptoms indicate that the body's cooling system is not functioning properly and is unable to cool itself.
- As symptoms progress, victims may experience vomiting or lose consciousness.
- Get victims to a cooler location and offer small amounts of water. Try to cool them down by soaking them with water and fanning them until medical help arrives.
- Heat exhaustion can be deadly. As the body's cooling system is overwhelmed by heat and humidity, the body's internal temperature continues to rise; unless brought under control, the victim will die.

HEAT STROKE

- Another sometimes fatal condition is heat stroke, the deadliest of all heat-related illnesses.
- Victims of heat stroke have hot, dry skin which may be red or spotted. Their bodies don't sweat because their cooling systems shut down as their internal body temperatures reach dangerous levels (around 105 degrees F).
- Heat stroke victims may be delirious or go into convulsions as their body temperatures shoot out of control.
- When confronted with a victim of heat stroke, you should administer first aid as quickly as possible. This is a serious emergency; heat stroke can cause death and lead to brain damage if not treated immediately.

- Have someone call for emergency medical help. Douse the victim with a steady flow of cool water until medical help arrives.

CONCLUSION

- Working in the heat can be tough. It can be uncomfortable, but doesn't have to be dangerous.
- When heat conditions dictate the need for caution, the company will provide ample supplies of liquids located close to work areas, establish designated cool down areas for employees and increase the frequency of rest breaks based on the working conditions.
- Be sure you follow all heat-related precautions designed by the company to keep you safe. By staying properly hydrated, taking rest breaks to cool down, and using good judgment we can all work and play safely in hot environments.

PREPARE FOR THE SAFETY MEETING OR TRAINING SESSION

Review each section of this Leader's Guide as well as the videotape. Here are a few suggestions for using the program:

Make everyone aware of the importance the company places on health and safety and how each person must be an active member of the safety team.

Introduce the videotape program. Play the videotape without interruption. Review the program content by presenting the information in the program outline.

Copy the review questions included in this Leader's Guide and ask each participant to complete them.

Copy the attendance record as needed and have each participant sign the form. Maintain the attendance record and each participant's test paper as written documentation of the training performed.

Here are some suggestions for preparing your videotape equipment and the room or area you use:

Check the room or area for quietness, adequate ventilation and temperature, lighting and unobstructed access.

Check the seating arrangement and the audiovisual equipment to ensure that all participants will be able to see and hear the videotape program.

Place or secure extension cords to prevent them from becoming a tripping hazard.

CONDUCTING THE PRESENTATION

Begin the meeting by welcoming the participants. Introduce yourself and give each person the opportunity to become acquainted if there are new people joining the training session.

Explain that the primary purpose of the program is to will show viewers how to prevent and respond to various heat-related problems by using prevention techniques; how to recognize the signs and symptoms of heat stress; and, what first aid procedures to administer when assisting victims of specific heat-related illnesses.

Introduce the videotape program. Play the videotape without interruption. Review the program content by presenting the information in the program outline.

Lead discussions about specific job tasks and work areas at your facility that involve heat and the precautions employees should take to prevent heat-related illnesses in these environments. Use the review questions to check how well the participants understood the information.

After watching the videotape program, the viewer will be able to explain the following:

- How heat affects the human body and can lead to heat stress;
- How to prevent and treat symptoms of heat rash and heat cramps;
- Why the symptoms of heat exhaustion and heat stroke are so dangerous and how employees should respond to victims exhibiting these symptoms;
- Why it is important to become acclimated to hot work environments;
- What general precautions everyone can take to help prevent heat stress.

WORKING SAFELY IN HOT ENVIRONMENTS
REVIEW QUIZ

Name _____ Date _____

The following questions are provided to check how well you understand the information presented during this program.

1. When confronted with heat-related illnesses, our main goal is prevention.
 - a. true
 - b. false

2. What has to happen for sweating to be effective at cooling the body?
 - a. the person must be in an area with high humidity
 - b. the sweat must be able to evaporate
 - c. the sweat must remain on the skin for as long as possible

3. Which heat-related illness is also known as prickly heat?
 - a. heat exhaustion
 - b. heat cramps
 - c. heat rash

4. What of the following is most likely to lead to heat cramps?
 - a. an employee's sweat remains on the skin for an extended period of time
 - b. an employee is sweating profusely and lost too much salt and other minerals
 - c. an employee has hot, dry skin because his cooling system has shut down

5. Heat exhaustion is the deadliest of all heat-related illnesses.
 - a. true
 - b. false

6. Which of the following is **not** a symptom of heat stroke?
 - a. victim has red or spotted skin
 - b. victim goes into convulsions
 - c. victim is sweating profusely

7. You should administer first aid to heat stroke victims as quickly as possible and have someone else call for emergency medical help.
 - a. true
 - b. false

8. What is the process called in which employees are gradually exposed to hot environments so they become accustomed to them?
 - a. adaptation
 - b. complacency
 - c. acclimation

9. While working in hot working conditions, your body can lose as much as one _____ of water per hour.
 - a. cup
 - b. pint
 - c. quart

ANSWERS TO THE REVIEW QUESTIONS

1. a

2. b

3. c

4. b

5. b

6. c

7. a

8. c

9. c