

PRESENTER'S GUIDE

"HEAT STRESS IN CONSTRUCTION ENVIRONMENTS"

Part of the Construction Safety Kit Series

THE CONSTRUCTION SAFETY KIT SERIES

This education program is part of the Construction Safety Kit Series. The programs in this series have been created to provide building and construction employees with good, basic information on everyday safety and health topics. Many of these programs also meet employee training requirements of specific OSHA regulations. This series includes the following programs:

- Crane Safety
- Caught-In/Between Hazards
- Dealing with Drug & Alcohol Abuse... Employees
- Dealing with Drug & Alcohol Abuse... Managers/Supervisors
- Electrocution Safety Part I... Types of Hazards and How you Can Protect Yourself
- Electrocution Safety Part II... Employer Responsibilities
- Eye Safety
- Fall Protection
- First Aid
- GHS Container Labeling
- GHS Safety Data Sheets
- Hand and Power Tool Safety
- Hand, Wrist and Finger Safety
- Hazard Communication
- Heat Stress
- Introduction to GHS (The Globally Harmonized System)
- Ladder Safety
- Personal Protective Equipment
- Rigging Safety
- Safe Lifting
- Slips, Trips and Falls
- Safety Orientation
- Struck-By Hazards
- Supported Scaffolding Safety
- Suspended Scaffolding Safety
- The OSHA Lead Standards
- Trenching and Shoring Safety
- Walking and Working Surfaces

Other products in the Construction Safety Kit product line include employee booklets and posters, which have been designed specifically to be used with the programs. Compliance manuals are also available for many of the OSHA regulatory topics. By combining these products you have all of the materials you need to promote and conduct a complete safety meeting (for information on these products, contact your local reseller).

WARRANTY/DISCLAIMER

"This program has been created to assist companies that are endeavoring to educate their employees regarding good safety and health practices. The information contained in this program is the information available to the producers of the program at the time of its production. All information in this program should be reviewed for accuracy and appropriateness by companies using the program to assure that it conforms to their situation and recommended procedures, as well as to any state, federal or other laws, standards and regulations governing their operations. There is no warranty, expressed or implied, that the information in this program is accurate or appropriate for any particular company's environment."

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INTRODUCTION TO THE PROGRAM

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Structure and Organization

Information in this program is presented in a specific order so that employees will see the relationships between the various concepts and can retain them more easily. The sections included in the program are:

- Heat and the body's "cooling system".
- Heat-related illnesses.
- Treating heat-related illnesses.
- Preparing to work in hot environments.

Each of the sections covers important information in one topic area, providing employees with the basis for understanding what heat stress is and how to avoid heat-related illnesses.

Background

Whether we're working outside under the hot sun or bundled up against the cold, physical exertion can make us hot and sweaty. And the hotter the job site becomes, the hotter we can get. This strain on our ability to keep cool is called heat stress.

Our bodies are strong, flexible and capable of performing a variety of demanding tasks, but heat stress can interfere with its natural processes. When this happens, the results can be serious, even fatal.

To avoid these hazards, employees need to understand how heat can stress the body, the different types of heat-related illnesses that can occur and how to help someone who has become dangerously overheated.

Objectives

This education and training program reminds employees that working in hot environments can cause serious health problems, and that there are things they can do to avoid them. Upon completion of the program, employees should:

- Know the health hazards that are associated with working on a hot job site.
- Understand the physical processes that help keep them cool in hot conditions.
- Understand how sweating depletes the body's reserves of water and vital minerals.
- Know how they can prepare themselves to work safely in the heat.
- Be able to recognize the symptoms of heat-related illnesses such as heat syncope, heat cramps, heat exhaustion and heat stroke.
- Know how to assist a person who is suffering from a heat-related illness.
- Know the equipment and safe practices they should use to work safely in hot environments.

Reviewing the Program

As with any educational program, the "presenter" should go through the entire program at least once to become familiar with the content and make sure that it is consistent with company policy and directives.

As part of this review process, you should determine how you will conduct your session. The use of materials such as handouts, charts, etc., that may be available to you needs to be well thought out and integrated into the overall program presentation.

PREPARING FOR THE PRESENTATION

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Structuring the Presentation

In conducting this education session, you should proceed with a friendly and helpful attitude. Remember that the "trainees" are looking to your experience and knowledge to help them relate to the situations shown in the program. So it is important to let the trainees interact with you and each other during the training session.

Stimulating conversation within the group is one of the best things you, as the presenter of the program, can do to help everyone get as much as possible from the session. Be alert for comments that could help in this area in future sessions and make note of them.

As the presenter, you also should:

- Keep the session related to the topic of heat stress and heat-related illnesses.
- Relate discussions to how class participants should handle high-heat situations so they can avoid heat-related illnesses.
- Keep any one person or small group of employees in the session from doing all the talking.
- Get everyone involved. Ask questions of those who don't participate voluntarily.
- Clarify comments by relating them to the key points in the program.

Use the "Outline of Major Program Points" section of this guide, as well as the information included in the quiz, as the basis for answering any questions. If you don't know the answer, say so. Remember, this is a positive program on dealing with heat stress. Make sure that your attitude and words reflect this, and that the emphasis is always on providing the information needed by the attendees recognize heat-related hazards in the workplace and deal with them effectively.

Setting Up the Class and Classroom

Remember, there are a number of things that must be done to "set up" the class as well as the classroom. These fall into several groups of activities, and include:

- **Scheduling and Notification**
 - You can use the scheduling and attendance form to schedule employees into the session (copies can be made using the printed "master" in the back of this binder or from the PDF version on the DVD).
 - Make sure that the session is scheduled so that it fits into your attendees' work day.
 - Send out notification of the session well in advance, to give people enough time to incorporate it into their schedule for that day.
 - If possible, post a notification on bulletin boards in the affected employees' areas.

- **The Classroom**
 - Schedule the room well in advance.
 - Make sure the room can accommodate the expected number of attendees.
 - Check it again on the day of the program to make sure there is no conflict.
 - Make sure the room can be darkened, and won't create a glare on the television screen.
 - Locate the light controls and test them.
 - Make sure the power for the DVD player you are using operates separately from the room light.
 - See if you can control the room temperature.
 - Know where the closest restrooms are located.
 - Assure that the room is free from distracting noises.
 - Make sure emergency exits are marked and known to the attendees.

- **Seating**
 - Make sure everyone can see the screen from their seat.
 - Make sure everyone can hear the DVD and you (when you speak).

- Check to see that seating is such that writing can be done easily.
- Make sure the seating arrangement allows eye contact between attendees, and between you and attendees.
- **Equipment and Materials**
 - Make sure the DVD player, monitor, and all appropriate cables and extension cords are available.
 - Make sure a stand or table is available and is of appropriate height for all attendees to easily see the monitor.
 - If you plan on using a chart pad, blackboard, or other writing board, make sure it is available, easy to see, and you have the proper writing implements.
 - Make sure you have 6" x 8" index cards or other materials that can be used as "name tents" for attendees.
 - Make sure you have made up a sufficient number of copies of the "quiz", as well as any other types of handouts you are using.
- **"Final Check"**
 - Make sure equipment is in the room prior to the scheduled session.
 - Make sure you have the right program, (look inside the three-ring binder).
 - Check to see that the room is set up properly.
 - Check equipment prior to the presentation to assure that it works.
 - Make sure extension cords, etc. are "taped down", if need be, to avoid tripping.

CONDUCTING THE SESSION

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The Initial Steps

In conducting the session remember the positive nature of this presentation. Everyone is attending in order to learn more about how to work on walking and working surfaces safely. Initially, you need to:

- Introduce yourself as the session leader.
- State the title of the program, "Heat Stress in Construction Environments" and the purpose of the session (to learn about heat stress, how to prevent heat-related illnesses and be able to deal with them if they do occur).
- Inform the attendees when there will be breaks (if you plan for them) the location of exits and restrooms and if water, coffee, or other refreshments will be available.
- Make sure all of the attendees have "signed in" on your scheduling and attendance form. Remember, it is very important to document people's attendance at the session.

Once this housekeeping is done, it is time to move to the "meat" of the session. First, the attendees need to be informed about the objectives of the session (this is where you can use a flip chart or board to list the objectives, which should be done prior to the class starting). This listing should be preceded with some introductory remarks. Your own words are always best, but the remarks should follow along the lines of the following:

"Today we are going to talk about heat stress. Whether we're working outside under the hot sun or bundled up against the cold, physical exertion can make us hot and sweaty. And the hotter the job site becomes, the hotter we can get. This strain on our ability to keep cool is called heat stress."

"Our bodies are strong, flexible and capable of performing a variety of demanding tasks, but heat stress can interfere with its natural processes. When this happens, the results can be serious and even fatal."

"To avoid these hazards, you need to understand how heat can stress the body, the different types of heat-related illnesses that can occur and how to recognize them, and what you should do to help a coworker who has become dangerously overheated."

"The program we are going to watch today will give us a lot of good information on heat stress. To make this the most productive session possible we need to look at what we want to accomplish (verbally reference the 'Objectives' list from the first section in this guide, or point to a white-board or chart where you have written them down)."

Once the objectives have been provided, you are ready to show the program. However, you do need to let the attendees know that they will be taking a quiz at the end of the session (if you are using it). It should be emphasized that they are not being "graded", but that the quiz is being used to determine if the session is effectively transmitting information to them in a way that they will remember.

Showing the Program

At this point, you need to introduce the title of the program once again, "Heat Stress in Construction Environments", darken the lights if necessary, and begin the showing of the program.

You have several options as to how you can move through the program and what employees see. The DVD menu has three "selection bars":

- "Play".
- "Scene Index".
- "Contact Info".

To just play the program from beginning to end, select "Play".

To view (or review) a specific section of the program, select "Scene Index". You will be presented with a group of buttons, each of which corresponds to a section of the program. You can then select the specific section that you want to view.

If you would like information on other programs and products that are available from MARCOM you can select "Contact Info" for information about how to contact us.

All of our DVDs, both English and Spanish, are subtitled (similar to closed captioning). If there are hearing impaired employees participating in your training session, or you want people to be able to read the program narration as well as hear it, push the "subtitle" button on your DVD player's remote control or the player's control panel. A print version of the narration will then appear on the screen as the program plays.

Using the Program for "Tailgate Meetings" and "Toolbox Talks"

The DVD version of the program has been designed specifically to facilitate "Tailgate Meetings" and "Toolbox Talks". The information in the DVD has been divided into 2-3 minute "chapters" on different issues involved with heat stress. Each chapter forms the basis for a focused 10-15 minute session on an important aspect of that topic (chapters can be directly selected from the DVD menu).

Conducting the Discussion

After the program has been shown, it is time for the group discussion on the information that it contained. Care must be taken to make sure that the discussion is kept to the general topic of heat stress and related illnesses. There are several ways to conduct this discussion. These include:

- Calling for questions from the attendees and using these questions as the basis for the discussion.

- "Leading" the discussion through the points covered in the program using statements such as:
 - "One of the sections that we saw in the program was about the physical processes that our bodies use to keep us cool in hot environments. What are these processes and how do they work?"
 - "We saw some good information on what we can do to cool off someone who has a heat-related illness. Who can review these procedures for us?"

You should use the discussion format that you are most comfortable with. The "Outline of Major Program Points" section in this guide, and the questions and answers in the master copy of the quiz should be used as a basis for this discussion, as well as the supplemental information that you have presented in this session*.

Remember, you have allocated a limited amount of time in which this discussion can take place. It is important to blend the attendees' questions and areas of interest with the objective of trying to touch on each major area within the program in the discussion. By touching on each area, the attendees are much more likely to retain the information presented in the session.

*(An alternative to this approach is to give the quiz immediately after showing the program, then using a review of the questions as a basis for your group discussion.)

Concluding the Presentation

Once discussion has concluded (whether naturally or you have had to bring the discussion to a close in order to complete the session within the time allowed) it is time to give the quiz if you are using it. Copies of the quiz can be made using the printed "master" in the back of this binder or from the PDF version on the DVD. Again, remind the attendees that the quiz is only meant to help determine how effective the presentation of the information is, and that they will not be graded on it. Let them know that they have approximately five minutes to complete the quiz.

At the end of the five minute period, remind the attendees to date and sign their quizzes, and then collect them. The attendees should be thanked for attending the session and reminded of any other sessions in the educational program that they may be attending. They can then be dismissed to return to their normal activities.

"Wrapping Up" the Paperwork

Before much time has passed, and the subject matter is fresh in your mind, several types of "paperwork" must be completed. First, check to make sure that all attendees signed the scheduling and attendance form. Next, make sure that you have a quiz from every attendee, dated and signed.

Depending upon what you have decided to do, a copy of the attendance form and the quiz for each attendee should be either filed in your files, or given to the attendee's department manager (or the personnel office) so that this paperwork can be included in their personnel file.

The attendees' training logs should also be updated, and every attendee should be given a filled out and signed training certificate, which signifies that they have successfully completed the course. Copies of the employee training log and the training certificate can be made using the printed "master" in the back of this binder or from the PDF version on the DVD.

Remember it is always a good idea to document information about an employee's attendance at these sessions, as well as the fact that the employee has come away from the session with an increased knowledge of what heat stress is, how to avoid it and what to do if it occurs.

OUTLINE OF MAJOR PROGRAM POINTS

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The following outline summarizes the major points of information presented in the program. The outline can be used to review the program before conducting a classroom session, as well as in preparing to lead a class discussion about the program.

- **Whether we're working outside under the hot sun, inside a building with no airflow, or bundled up against the cold, physical exertion can make us hot and sweaty.**
 - The hotter our workplace becomes, the hotter we can get.
- **This strain on our ability to keep cool is called heat stress.**
- **Our bodies are strong, flexible and capable of performing a variety of demanding tasks, but heat stress can interfere with its natural processes.**
 - When this happens, the results can be serious, even fatal.
- **It's not unusual for us to get hot and sweaty on the job. Sometimes it's because of:**
 - The weather.
 - The physical tasks we perform.
 - The nature of the job site.
- **But being overheated is not only uncomfortable.**
 - It makes any task more difficult.
 - It can also affect our health.
- **Fortunately, our body has physical processes that kick in automatically to help us keep cool.**
 - For instance, the circulation of our blood can help to lower our body temperature.

- **As our temperature rises, the circulatory system directs more blood flow to the surface our skin.**
 - There the blood gives up the excess heat it has absorbed to the air.
 - Then it circulates back inside the body to pick up more heat.
 - As the process continues, heat is "pumped" out of our body.

- **When more cooling power is needed, our sweat glands go to work.**
 - They move heat out of the body in the form of warm water.
 - The evaporation of the sweat cools our skin off as well.

- **It's an effective system, but it does have a downside.**
 - Sweating depletes our body's supply of water and the vital minerals known as electrolytes.
 - Running low on these substances can cause our body to malfunction.

- **In extreme conditions, we can sweat out up to one quart of water and electrolytes an hour.**
 - This will make us thirsty, but we can't rely on our natural thirst alone to get us to drink enough to rehydrate ourselves.
 - We need to make a conscious effort to take in even more liquids.

- **You should try to drink five to seven ounces of liquid every fifteen or twenty minutes when you're sweating.**
 - "Sports" or "electrolyte" drinks can be a good option, because they're formulated to replace the minerals that you're sweating out as well.

- **Avoid drinks that contain alcohol or caffeine.**
 - They will only accelerate your water loss.

- **Some medicines can also cause water loss, or have other adverse effects when you're overheated.**
 - Ask your doctor about any medication that you take to find out if it could cause problems when you're working in hot conditions.

- **Watch what you eat in the heat as well.**
 - Hot meals raise your internal temperature.
 - Heavy foods require more blood to be used for digestion.
 - That blood could be helping to cool you off instead.
 - Stick to light, cool meals when you're working in the heat.

- **Whenever we work or play in the heat, our bodies' natural cooling processes work hard to prevent us from becoming overheated.**
 - The greater the heat, the harder those processes have to work to cool us off, and the more likely they are to get out of whack.

- **When these natural cooling defenses break down, we are in danger of developing heat-related illnesses such as:**
 - Heat syncope.
 - Heat cramps.
 - Heat exhaustion.
 - Heat stroke.

- **Sometimes when our system tries to cool itself off by directing more blood to the skin, the other parts of our body can get too little blood.**
 - This can cause a person to lose consciousness or faint, a condition called heat syncope.
 - Warning signs include dizziness and a rapid heartbeat.
 - Heat syncope often occurs in people who are new to working in high-heat conditions.
 - Serious injuries can result if the victim falls or loses control of a tool or vehicle when they faint.

- **When we sweat a lot and fail to replace the vital minerals or electrolytes that we're losing, we can develop another heat-related illness, known as heat cramps.**
 - Symptoms include painful cramping as well as involuntary jerking or spasming of the muscles, often in the calf, thigh and shoulder.

- **When our body runs low on both electrolytes and fluids, the result can be an illness called heat exhaustion.**
 - In addition to intense thirst, a person suffering from heat exhaustion may feel confused, dizzy, weak and uncoordinated.
 - They will also sweat profusely.

- **Heat stroke, on the other hand, occurs when the body's natural cooling mechanisms break down completely, and the victim becomes unable to sweat.**
 - Their skin will be flushed, very hot and dry.
 - Other symptoms of heat stroke include a throbbing headache, rapid heartbeat, nausea and vomiting.

- **Heat stroke causes a person's body temperature to rise uncontrollably, which is extremely dangerous.**
 - Heat stroke can cause damage to internal organs, including the brain, and can even be fatal.

- **When you're experiencing any type of heat stress, it's important to pay attention to what your body tells you.**

- **If you ignore the symptoms of one heat-related illness, such as heat cramps, it can quickly develop into another one such as heat exhaustion or heat stroke, which can be a lot more serious.**

- **Even when we do our best to protect ourselves from the heat, working in hot conditions can still knock us for a real loop.**
 - It's important to know how to treat heat-related illnesses, because they can be serious, even life-threatening.

- **Remember how the body reacts when we get overheated.**
 - Our system uses the sweating process to carry heat out of the body in the form of warm water.
 - Sweating constantly depletes our reserves of water and vital minerals (electrolytes).

- **If we don't make a point of replacing our fluids and electrolytes, the lack of them can cause us to develop heat-related illnesses such as heat cramps, heat exhaustion and heat stroke.**

- **When a coworker develops a heat-related illness on the job, you need to address the causes directly:**
 - Get the victim out of the heat and into a cool environment.
 - Have them sit or lie down and rest.
 - Cool them off by bathing their head, face and neck with cool water, or applying wet towels or sheets.
 - Give them cool water or an electrolyte beverage to drink.

- **If there is one available on-site, get the victim into a shady, air-conditioned area.**
 - Remove any outerwear they have on.
 - Loosen any tight garments.

- **If you think they may be experiencing heat stroke, call for emergency medical assistance immediately!**
 - It's also critical to lower their body temperature as soon as possible.

- **There are several ways you can speed up the cooling process, including:**
 - Applying cold compresses to their armpits and groin.
 - Wetting down their clothing.
 - Directing a fan on them.
 - Placing them in a cool bath.
 - And using ice or cold packs.

- **You should stay with the victim and continue to cool them down until the EMTs arrive.**

- **Even though we often can't control how hot our work environment is, there are things that we can do to handle the heat better by preparing for it ahead of time.**
 - This can enable you to work more comfortably.
 - It also helps you avoid the hazards of heat-related illnesses.

- **Whenever it is possible you should take a gradual approach to working in a high-heat environment.**
 - This gives your body time to get used to the temperature.
 - The average worker may need from 5 to 10 days to get fully acclimated, particularly in environments that are extremely hot.

- **People who are in good physical condition can generally get used to high heat conditions more quickly.**
 - They can also perform better in the heat, because their body and its muscles are lean and toned.

- **When a person is overweight or has a lot of fatty tissue, their body's cooling system has to work that much harder to keep their temperature down.**

- **Choosing the right work clothes can be important to staying cool as well.**
 - Loose, lightweight clothing made of cotton or cotton blends helps you get rid of excess heat by allowing the air to circulate freely around you, and wicking away much of your sweat.

- **The color of the clothing you wear makes a difference too, especially if you're working in the sun.**
 - Black or other dark colors actually absorb heat, so you should avoid wearing them.
 - Wear white and other light colors instead.
 - They help keep you cooler by reflecting the heat.

- **The same principle applies when you wear a light-colored hat to keep the hot sun off your head.**

- **Don't neglect the sunscreen.**
 - It not only prevents sunburn, it helps prevent the sunshine from heating up your skin as well.
- **Remember to wear sunglasses too!**
 - Keeping the sun off your face and out of your eyes both protects you and helps you to feel cooler.
- **If your work takes you into areas with intense levels of radiant heat, your employer may provide you with special protective clothing.**
 - One choice is to use reflective garments made of aluminized fabric.
 - Another option is ice vests, which are often used by fire-fighters and other workers who are exposed to very high heat.
- **Your supervisor can tell you what type of protective clothing is best for keeping you cool and safe on the job.**

*** * * SUMMARY * * ***

- **Too much heat can create a number of problems for our bodies.**
- **You need some time to get used to working in higher temperatures gradually.**
- **When it's hot, drink water and sports beverages regularly to replenish your fluids and electrolytes, and eat only light, cool meals during the work day.**
- **Dress in light-colored cotton or cotton-blend clothing.**
- **Know how to recognize heat-related illnesses and what to do if you or a coworker develops one.**
- **Now that you understand the hazards that heat can create, and know how to handle heat-related illnesses, you can help to make sure that you and your coworkers stay cool and healthy on the job... every day!**

ACCOMPANYING MATERIALS

ACCOMPANYING MATERIALS

In order to assist you in conducting your session on heat stress, we have provided some materials that can be used with this program. These materials have been furnished in PDF format on the DVD as well as printed "masters" in the back pocket of this binder. This will enable you to make as many copies of these forms as you need. If you have colored paper available to you, it is often useful to put each form on a different color. This enables you to easily differentiate between the materials. The materials enclosed with this guide include:

Scheduling and Attendance Form

This form is provided so you can easily schedule your attendees into each session of the program. It's important that you have each attendee "sign-in" on the appropriate form, documenting their attendance at the session. Typically, a copy of this form is filed in the employee's personnel file.

Quiz

The quiz is normally given after viewing the program. However, if you would like an indication of the "increase" in the attendees' knowledge of heat stress and heat-related illnesses, you can give the quiz both before and after the program is shown.

You can also use the quiz as the basis for a class discussion. If you have decided to give the quiz both before and after the attendees view the program, it is often interesting to have the attendees compare their "before" and "after" answers as part of the session. Typically, the quiz is filed in the employee's personnel file.

Training Certificate

This form allows you to give each employee their very own "certificate of completion", showing that they have attended the course and taken the quiz. Space is provided to insert the employee's name, the course instructor and the date of completion.

Employee Training Log

This log helps you to keep track of when each employee has taken the course, as well as associated courses/training. Space is provided to list pertinent data about the employee, as well as information such as the date the course was taken and the instructor conducting the course. A copy of this form should be kept in each employee's training or personnel file.

Booklet*

A sample copy of the employee booklet that has been designed for use with this program has also been included. Using both illustrations and text to review important points, the booklet is designed to reinforce the message that employees receive in the training session. The material is presented in the same order as seen in the program and is organized into concise sections, making it easy to understand and remember.

**Additional booklets, as well as copies of the poster that has been created to get employees thinking about heat stress, are available from your reseller.*