Beating the Heat

Heat-related illnesses are vastly under recognized and underreported. Are you taking effective measures to help employees beat the heat?

By Donna Miles, managing editor of the Occupational Safety and Health Administration's publication, *Job Safety and Health Quarterly*

Last summer, when much of the United States suffered its most intense heat wave in a decade, a Minnesota cattleman awoke to a radio advisory urging farmers to keep their cattle out of the sun because, with a forecasted heat index of 110, it was too hot even for grazing. In response, the cattleman started his day by turning on the sprinklers in his barn, dousing his cows with hundreds of gallons of water while circulating the air with massive fans. His philosophy: "You have to treat the cows like you treat yourself."

Unfortunately, not all employers recognize how deadly the combination of heat and humidity can be to their workers, and take steps to protect them. Likewise, not all workers recognize how vulnerable their bodies are to extreme temperatures and look out for themselves and their coworkers.

During 2001, excessive heat exposure caused 24 worker deaths and 3,135 occupational injuries and illnesses involving days away from work, according to the Bureau of Labor Statistics. These numbers were up from the previous year, when 21 workers died and 2,254 lost workdays due to heat-related injuries and illnesses occurred. Despite these alarming statistics, state and federal agencies estimate that heat-related illnesses are vastly underrecognized and underreported.

Many workers, including those in foundries, laundries, bakeries and restaurants, face hot working conditions year-round. During hot-weather months, these conditions can become stifling, despite efforts to cool the area with air conditioners, fans or open windows.

For people who work outside, particularly those involved in heavy labor such as construction, roofing and farming, blazing summer temperatures can be especially unforgiving.

Consider the 36-year-old man who stopped dismantling a car at a Tilton, Ill., auto salvage shop last summer, complaining he felt overheated. His coworkers summoned emergency help, but he died less than an hour later. Or the 58-year-old restaurant worker in Aurora, Ohio, who collapsed after cleaning a patio area. Despite emergency worker's efforts to revive him, he was pronounced dead in the hospital emergency room with a core body temperature of 107 degrees. Or the highly publicized case of 27-year-old Minnesota Vikings tackle Korey Stringer, who collapsed last July after morning practice during the second day of training camp and later died of heatstroke.

The Body's Response

When exposed to severe heat, the body works to maintain a fairly constant internal temperature. It increases blood flow to the skin, where it releases excess heat. The body produces sweat that, when it evaporates, cools the skin.

But in extreme conditions, this process doesn't work as nature planned. When muscles are being used for physical labor, less blood is available to flow to the skin and release body heat. And sweat doesn't evaporate from the skin in high humidity. The body can't release excess heat, so its core temperature rises and the heart rate increases.

As a result, the person starts to lose concentration and has difficulty focusing on tasks. Some people begin to feel sick or irritable and lose the desire for the fluids they so desperately need. Some may faint or even die if they do not receive immediate care to lower their body temperature.

TYPES OF HEAT STRESS

HEAT CRAMPS – Mild. Results from dehydration and a slight imbalance in electrolytes. Victims respond well to rest and rehydration with fluids.

HEAT EXHAUSTION – More severe. Involves removing the person from the hot environment to a cool, shaded location and rehydrating with cool fluids if drinking water does not relieve the condition.

HEAT STROKE – Most severe. A medical emergency requiring extensive intervention and support. Occurs most often when workers perform strenuous work in hot, humid weather for an extended period.

Beating the Heat continued

Not everyone reacts equally to heat. A worker's age, weight, fitness level and medical condition play a role. Low-sodium diets, consumption of alcohol or caffeine, and some medications increase the risk. Toxicology tests on Baltimore Orioles pitcher Steve Bechler, who collapsed during a spring training workout in February and died the next day of heatstroke, identified several contributing factors: use of an over-the-counter dietary supplement, excess weight, hypertension, abnormal liver function and the warm Florida climate.

Acclimation is another important factor. The first days in a hot environment are generally the hardest on workers, and when heat-related injuries frequently occur. That was the case for a 44-year-old construction laborer who had just returned to work in Bossier, La., last summer after a four-day holiday. Working in 95- to 97-degree temperatures, he collapsed and later died of heat exhaustion.

Most workers are able to work with less strain and stress following an adjustment period of five to seven days. However, their bodies must be reacclimated after an absence from the hot environment, such as after they take a vacation.

Prevention Saves Lives

As severe as heat-related injuries can be, Trese Louie, a safety and health specialist in OSHA's Directorate of Science, Technology and Medicine, says they are among the most preventable. She urges workers to drink plenty of water – from five to seven ounces every 15 to 20 minutes – to replace the two to three gallons of sweat they may lose during a workday. She also encourages workers to take short but frequent breaks from their work in a cool, shady area. And whenever possible, she recommends employers alter work hours so employees do their most demanding physical work before or after the hottest hours of the day.

Keith Piercy, a compliance safety and health officer in OSHA's Tampa, Fla., area office, says employers at most of the worksites he inspects "do a very good job" of providing their workers plenty of water and electrolyte drinks in hot weather. Some employers go the extra measure, offering their workers special-filled scarfs that, when soaked in water and wrapped around their necks, help cool their bodies, or have misting stations, like those used to cool professional football players.

Yet Piercy says he notices two areas where some employers are missing the mark. Although they may encourage workers to take more frequent breaks in particularly hot weather, they often do not set aside a cooler or shaded area for those breaks – meaning that the workers are not able to cool themselves effectively before returning to work.

And although many of the larger companies Piercy visits take steps to teach their workers about heat-related illnesses, he says some of the smaller companies fall short on education. "What employers aren't always good at is impressing on their employees how much caffeine and alcohol affect their ability to work in the heat," he says, "or the benefit of wearing lighter-colored clothing that reflects heat instead of absorbing it."

Louie says worker education is key in helping prevent heat injuries at work. "Workers need to know how to avoid heat injuries and how to recognize signs of heat stress not only in themselves, but in their coworkers, too, she says. "By looking out for each other, they can help protect each other. "Heat-related injuries take their toll on too many workers," says Louie. "With increased awareness and some basic precautions, many of these illnesses and deaths can be prevented.

HOW TO PROTECT WORKERS

1) Encourage workers to drink plenty of water – about a cup of water every 15 to 20 minutes, even if they are not thirsty – and avoid alcohol, coffee, tea and caffeinated soft drinks that dehydrate the body.
2) Help workers adjust to the heat by assigning a lighter workload and longer rest periods for the first five to seven days of intense heat. This process needs to start all over again when a worker returns from vacation or absence from the job.
3) Encourage workers to wear lightweight, light-colored, loose-fitting clothing. Workers should change their clothes if they get completely saturated.
4) Use general ventilation and spot cooling at points of high heat production. Good airflow increases evaporation and cooling of the skin.
5) Train first-aid workers to recognize and tre at the signs of heat stress and be sure all workers know who has been trained to detect early signs of heat-related illness. Permit workers to interrupt their work if they become extremely uncomfortable.
6) Consider a worker's physical condition when determining fitness to work in hot environments. Obesity, lack of conditioning, pregnancy and inadequate rest can increase susceptibility to heat stress.
7) Alternate work and rest periods, with rest periods in a cooler area. Shorter, more frequent work-rest cycles are best. Schedule heavy work for cooler times of the day and use appropriate protective clothing.
8) Monitor temperatures, humidity and workers' responses to heat at least hourly.

HEAT STRESS CARD

OSHA's Heat Stress Card is available in both English and Spanish (OSHA 3154 and 3155, respectively). These laminated, fold-up cards, available free to employers to distribute to their workers, provide a quick reference about heat-related injuries, including warning signs and prevention tips. Employers can order the cards through the OSHA Web site at www.osha.gov, which also provides additional information about heat-related injuries.

Clearing the Fog of HAZWOPER Training

By Gary Gagliardi, CFPS, Safety Resources

In conducting Hazwoper classes around the country, I have found one commonality that is consistent regardless of the industry involved. That common factor is that there is a lot of confusion over what Hazwoper classes are required or needed. That confusion is understandable, as there are ten different Hazwoper courses to choose from not counting Refresher training. Determining which Hazwoper courses are required in your company can save you significant time and costs while ensuring your employees are properly trained and ready to respond if needed. This step-by-step guide should assist you in recognizing your needs and thus your training requirements.

First let's clarify what Hazwoper is. Hazwoper stands for Hazardous Waste Operations and Emergency Response. There is a distinction between "Hazardous Waste Operations" and "Emergency Response." As you determine if your employees require Hazwoper training, the selection of the required training should fall into place.

HAZARDOUS WASTE OPERATIONS

Hazardous waste operations include landfills, hazardous waste sites, clean up operations covered by the Resource Conservation and Recovery Act (RCRA), operations involving hazardous waste conducted at treatment, storage and disposal (TSD) facilities, and DOT Hazmat. Hazardous Waste Operation is broken into two main areas, hazardous waste cleanup activities, and activities at Treatment Storage and Disposal Facilities (TSDF).

Hazardous waste Cleanup Activities:
If your employees work in an area that has exposures to hazardous waste materials and has been classified as a hazardous waste site by a governmental body or if your employees are working on a project where a requirement for working at the site would be to have Hazwoper certification, then your employees would need a Waste Worker course. There are two Waste Worker courses, **a 40-hour Hazwoper course** and a **24-hour Hazwoper course**.

If at the hazardous waste site where your employees work, they will be exposed to levels of chemicals above the 8 hour Permissible Exposure Limit (PEL) established by OSHA, or will be expected to wear levels of personal protective equipment (PPE) or some type of respirator to protect them from the chemical hazards, they will need the 40 hour Hazwoper course plus three days of actual field experience under direct supervision of a trained experienced supervisor. This is called the **General Site Worker course.**

If at the hazardous waste site where your employees work, they will **NOT** be exposed to levels of chemicals above the 8 hour Permissible Exposure Limit (PEL) established by OSHA, or will **NOT** be expected to wear levels of personal protective equipment (PPE) or some type of respirator to protect them from the chemical hazards, then the 24 hour Hazwoper course is needed plus one day of actual field experience under direct supervision of a trained experienced supervisor. The 24-hour course is called the **Occasional Site Worker course**.

On-site supervisors and managers of employees working with Hazwoper certified workers should attend the 40-hour or the 24-hour Hazwoper course (dependent on the exposure), **plus** an additional 8 hours of specialized training. This is called the **Hazardous Waste Supervisors course.**

Activities at Storage and Disposal Facilities (TSDF):
If your employees work at a designated TSDF as defined by a governmental body, then you are required to have the 24-hour TSDF worker training program. This is called the **TSDF course.**

DOT Hazmat Employee:
If your employees are involved in any way in the handling, packaging, or preparation of hazardous materials that are transported, the U. S. Department of Transportation requires that specific training and certification be maintained. This includes employees who work in shipping departments, mail rooms, drive trucks, handle packages with DOT labels, fill out shipping papers, or transport shipments which contain hazardous materials. Training is required which includes:

- General Awareness training
- Function-Specific training
- Safety Training
- Security Awareness training (if a security plan is required)

This training is required within the first 90 days of employment and every three years thereafter.

EMERGENCY RESPONSE:

Emergency Response applies to all Hazardous Waste Operations, but this portion also applies to facilities that utilize hazardous chemicals, toxics and reactive materials above the threshold quantities such that they present a potential for a catastrophic event (appendix A to 29CFR 1910.119 specifies hazardous chemicals and the threshold quantities). An example of a need for Emergency Response to a hazardous substance release would be a food processing site utilizing over 10,000 pounds of Anhydrous Ammonia as a refrigerate.

Clearing the Fog of HAZWOPER Training continued

There are five levels of emergency response training. Employees that are expected to response to an emergency release of chemicals, toxics or reactive materials are required to have one of the five levels of emergency response training in accordance with section (q) of the Hazwoper regulation.
OSHA leaves it up to the employer to determine which level is needed based on what you expect the employee to do. The five levels are as follows:

- First Responder Awareness level
- First Responder Operational level
- Hazardous Materials Technician
- Hazardous Materials Specialist
- Hazardous Materials Command (Incident Commander)

Based on what you expect the employee's role to be in the event of an emergency release, the following information will help you to determine the training required:

First Responder Awareness level
If you have workers who are likely to witness or discover a hazardous substance release and whose only responsibility will be to initiate an emergency response sequence by notifying the proper authorities of the release, and you do not want them to take any further action beyond notifying the authorities of the release and evacuating the area, then First Responder Awareness Level training is appropriate. No set minimum hours are assigned to this training.

First Responder Operational level
If you have workers that are expected to respond to releases or potential releases of hazardous substances as part of the initial response for the purpose of initiating actions to limit the release without becoming contaminated with it, containing the release from a safe distance, keep it from spreading, and prevent exposures in order to protect nearby persons, property, or the environment from the effects of the release without actually trying to stop the release, then First Responder Operations Level training is appropriate. An example of this action would be: if an employee would be able to minimize the release by containing the material to keep it from getting into storm drains, and turning off valves to stop the flow of materials without exposing themselves to any of the material at any time. This requires 8 hours of training and demonstrate Awareness level competency.

First Responder Materials Technician level
If you expect your workers to respond when a release or potential release of hazardous substances are discovered, for the purpose of stopping the release by approaching the point of release in order to plug, patch or otherwise stop the release, and cleanup of the spill, then First Responder Materials Technician level training is appropriate. These workers must be provided with the required personal protective equipment (respirators and clothing) to safely work with the materials, and to approach the point of release to control it without becoming contaminated by it. Maintenance workers typically fall into this category. This level requires Operations Level training plus 24 hours of training.

First Responder Specialist level
If you have workers that would support the hazardous materials technicians due to specific knowledge of the various substances they may be called upon to contain and whose duties parallel those of the hazardous materials technician then First Responder Specialist level training is appropriate. The hazardous materials specialist may also act as the site liaison with Federal, state, local and other government authorities in regards to site activities. This level requires Materials Technician Level training plus 24 hours of training.

First Responder On-Scene Incident Commander
If you have personnel that are expected to assume control of the incident scene by overseeing the operation and the handling of the release through its cleanup, then First Responder On-Scene Incident Commander level training is appropriate. This level requires Operations Level training plus 24 hours of training.

REFRESHER COURSES:

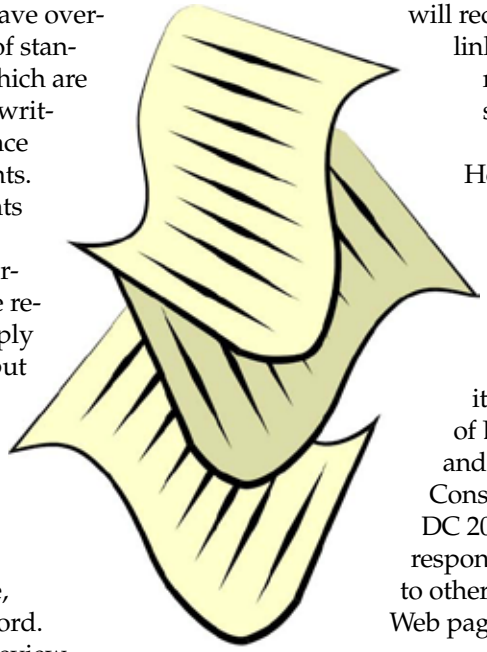
If you have taken either the General Site Worker, Occasional Site Worker, or TSDF worker courses previously, you are required to have an eight-hour refresher course each year. Your certification is good for only 365 days. Site specific training is always encouraged by OSHA to ensure that personnel are adequately trained to the specific issues at the site. An annual 8-hour Hazwoper Refresher course is required prior to the expiration date of the current certification for everyone who has taken the 24 or 40 hour OSHA Hazwoper course to maintain their certification.

Emergency response refresher training is required but does not have a set number of hours assigned. Generally, personnel certified to either the Awareness or Operation levels can satisfy their refresher training program by repeating some or all of their original class. For those with higher levels of training, hands-on practice is necessary.

NFIB Tools and Tips:
OSHA's Standard Interpretation Letters

If you have visited the Occupational Safety and Health Administration's (OSHA's) Web site at www.osha.gov, you know that it includes a number of resources to help small businesses comply with workplace safety and health regulations. These resources range from pocket-sized Quick Cards to comprehensive eTools that provide detailed information on specific industries or workplace safety and health issues.

One resource that you may have overlooked is OSHA's collection of standard interpretation letters, which are OSHA's official responses to written questions about compliance with the agency's requirements. (Note that OSHA requirements are set by statute, standards, and regulations. OSHA's interpretation letters explain these requirements and how they apply to particular circumstances, but they don't create additional employer obligations.)



There are several ways to search the OSHA Web site for standard interpretation letters, including by date, standard number, and key word. For example, if you want to review OSHA's standard interpretation letters on the training requirements under OSHA's hazard communication standard, you could type key words into the search field (e.g., hazard communication training). You could also search by the standard number if you know it. In this example, the relevant standard is 29 C.F.R. § 1910.1200(h). You'll see that OSHA has posted standard interpretation letters on a variety of issues that arise under 1910.1200(h), including retraining employees who have been previously trained by another employer, providing training in a comprehensible language, and whether merely providing employees with Material Safety Data Sheets satisfies the standard's training requirements (it doesn't, by the way).

Writing a letter isn't the only way to get information from OSHA. You can also contact OSHA by calling the toll-free number at 1-800-321-OSHA (6742), submitting an e-mail question through the electronic mail form on OSHA's Web site, or calling your local OSHA Area Office. If you contact OSHA via the 800 number or by e-mail, you will receive responses in the form of links to or copies of existing OSHA materials, including any relevant standard interpretation letters.

However, if OSHA has not issued a standard interpretation letter that addresses your question, the only way to get an official OSHA response is the old-fashioned way – by writing a letter and mailing it to OSHA at: U.S. Department of Labor, Occupational Safety and Health Administration, 200 Constitution Ave., NW, Washington DC 20210. OSHA posts selected responses that it thinks will be helpful to others on its Standard Interpretations Web page.

So the next time to visit OSHA's Web site, take a moment to review the collection of standard interpretation letters. They can be a valuable resource for small businesses and others seeking guidance on OSHA requirements. If you don't find the answer to your question, you can write your own letter to OSHA.

OSHA