

ACCIDENT REVIEW: HEAT STRESS

Recently a construction worker died from heat stroke one day after being taken to the hospital. The victim was working on an addition to a factory sawing boards to make concrete forms. He worked until 5:00 pm that day and was in the parking lot on his way to his vehicle when he apparently collapsed beside his vehicle.

A worker on the second shift at the factory was taking scrap material outside to a dumpster when he found the victim on the ground. The factory worker returned to the plant and told his supervisor there was a man on the ground in the parking lot who needed emergency care.

After instructing the company receptionist to call for emergency medical services, the supervisor went to the parking lot to administer emergency care to the victim until EMS arrived.

When EMS arrived, they recorded the laborer's body temperature as 107 degrees F. The victim was transported to a local hospital where he died the next day with an internal body temperature of 108 degrees F.

Death was listed by the coroner as due to heat stroke.

Investigators made the following recommendations following the incident:

- Employers should train supervisors and employees to recognize symptoms of heat exhaustion/stroke when working in high heat index and/or humid conditions. According to, "The Physician and Sports Medicine", heat stroke occurs when the body's ability to dissipate heat is impeded either due to disease or physical exertion. Signs of heat stroke are: the person stops sweating, becomes dizzy, confused and/or disoriented, rapid pulse rate, dizziness, nausea, headache, or a high body temperature of 103 degrees Fahrenheit
- To avoid dehydration and heat exhaustion/stroke, employees should be given frequent breaks and be provided drinking water and other hydrating drinks when working in humid and hot conditions. While working in heat, staying hydrated is important. Drinking the appropriate amount of fluids such as water and/or sports drinks that replace the body's electrolytes helps the body maintain its appropriate temperature. It is suggested to match fluid loss from the body with fluid intake. Besides drinking plenty of fluids, employees should wear light colored clothing and fabrics that wick away moisture from the skin. Though, not a factor in this incident, when the weather is conducive to heat exhaustion/stroke, workers should also avoid consumption of alcohol and caffeine.
- Work hours should be adjusted to accommodate environmental work conditions such as high heat index and/or high humidity. When high temperatures are predicted, employers should consider changing work hours to accommodate the weather. Instead of working in the heat of the day, work hours could be changed from 6:00 am to 2:30 pm, or at a time when heat and humidity exist at a lower level.



DISCUSSION QUESTION

What could be done to prevent a similar incident from occurring?

HEAT STRESS DISORDERS

The average temperature of a human body is 98.6 degrees Fahrenheit. Changes in body temperature, even by just a few degrees, can cause serious bodily harm. Working in high temperatures and/or humid conditions greatly increases the risk of such changes.

Heat stroke is the most dangerous of all heat related injuries. When it occurs, your body loses the ability to regulate its own temperature. Symptoms of heat stroke include loss of the ability to sweat, dry-hot skin, mental confusion, convulsions, delirium, loss of consciousness, and even falling in to a coma. If you or a colleague exhibits these symptoms, seek immediate medical attention.

When waiting for medical personnel to arrive, move the victim to a cooler place, soak the victim's clothing with cool water, offer them small sips of water and fan them vigorously. If you do not seek immediate medical attention, heat stroke can kill.

Heat exhaustion is another dangerous heat related illness. It is caused by exposure to high temperatures, particularly when combined with high humidity, and strenuous physical activity. Symptoms of heat exhaustion include clammy, moist skin and pale complexion. These signs and indicators may also be accompanied by extreme fatigue, headache, nausea, vomiting, giddiness and even fainting. You can treat heat exhaustion by moving the victim to a cooler place, soaking their clothing in cool water, fanning them vigorously and offering them a drink with electrolytes.

Fainting may also occur when with prolonged exposure to a hot environment. This happens most often when you are standing still for extended periods of time. Victims usually recover from fainting after a period of lying down.

A less severe condition that you may incur when working in extreme temperatures is heat cramps. Heat cramps are muscle spasms that are caused by dehydration. They usually occur in the calf muscles. If heat cramps become common, consult a doctor to determine the best way to treat them.

You may also experience heat rash when working in hot and humid conditions. This occurs when sweat causes wet or moist clothing to rub against your skin. Heat rash can be prevented by resting in a cool place and allowing sweat to dry.

There are a number of tactics that you can employ to prevent heat related injuries and illnesses. Some of those include wearing a hat and sunscreen, drinking plenty of fluids and avoiding caffeine, alcohol and very cold drinks. Caffeine and alcohol can dehydrate you and cold drinks can cause stomach cramps.



DISCUSSION QUESTIONS

What are some symptoms of heat stroke?

What are heat cramps?

Why should you avoid caffeine, alcohol and very cold drinks?

SUNBURN

Prolonged exposure to the sun can result in sunburn and other heat related illnesses. Sunburn can be painful and cause both short term and long term health complications. You should be aware of the symptoms, treatments, health conditions and preventive measures associated with sunburn.

Although it can occur year round, you are most at risk for sunburn during the summer months between 10:00 a.m. and 4:00 p.m. When spending time outdoors, you should always protect yourself with sunscreen.

The signs of sunburn are not immediately apparent. If you were to experience any other thermal burn, you know right away. However, with sunburn you may only begin to identify symptoms about 4 hours after sun exposure. Typically, they worsen within 24-36 hours.

Some common symptoms of sunburn include red, warm and tender skin, swollen skin, blistering, headache, fever, nausea, and fatigue. Pain is usually worse 6-48 hours after sun exposure. Symptoms typically will last 3-5 days, and sometimes the skin will peel as well.

Unfortunately, if you experience sunburn, there is no quick fix or cure. However, symptoms can be treated with aspirin, acetaminophen, or ibuprofen to relieve pain, headache and reduce fever. If you experience sunburn, drink plenty of fluids. Sunburn increases the risk of dehydration. Additionally, you can take cool baths or apply aloe-vera or over the counter creams or products to sooth the skin.

In the event, blistering occurs, lightly bandage or cover the area with gauze to prevent infection. Never pop the blisters as this may cause infection. If you experience further complications, seek immediate medical attention!

In addition to the skin, eyes can get burned from sun exposure. If your eyes become sunburned, they may become red, dry, painful, and feel gritty. You should wear hats and or sunglasses to protect your eyes when working outdoors.

As a final warning, repetitive overexposure to the sun can result in premature wrinkling, aging of the skin, age spots, and an increase the risk of skin cancer. So always wear sunscreen!



DISCUSSION QUESTIONS

What are some common symptoms of sunburn?

How can you treat sunburn?

Can your eyes experience sunburn?

What can happen with repetitive overexposure to the sun?

SAFETY TALK

Work/Rest Schedules

Under High and Very High to Extreme risk levels, it will become necessary to change how work is done at your worksite. This can include a shift of work hours, increased availability to drinking water and including work/rest periods. These cycles allow the body time to get rid of excess heat, slow down the production of internal heat, decrease the heart rate and provide greater blood flow to the skin for cooling.

For work/rest cycles to best protect you from heat-related illness, you should spend the rest periods in a cool place, like a lightly air-conditioned room, trailer, or vehicle. Unfortunately, this type of area is not always available to you. In this case you will want to choose an area that is fully shaded with as many of these characteristics as possible:

- Surfaces should not be warm from earlier sun exposure; like a north-facing wall.
- Areas should be open to breezes but also give you some protection if the breezes feel uncomfortably hot. Extremely hot breezes can increase the risk of developing a heat-related illness.
- Spaces should be free of other hazards like moving traffic, excessive noise or falling objects.
- A supply of cool drinking water needs to be close by.
- There needs to be enough space for the number of employees that will be taking a rest break at one time.
- The area should be equipped with ways for the workers to do productive, light work during the rest period.



The idea of the rest period does not mean that you are on an extended break. These are times of light work to allow your body time to cool down. During rest periods you will be called upon to complete light tasks like completing paperwork, sorting small parts or hand tools, attending a meeting or receiving some type of training.

During elevated heat advisories, there will be a person at the worksite that is knowledgeable about the effects of heat on your body and heat-related illness. This individual will be authorized to modify a day's work activities or enforce a work/rest schedule as needed. If you are unsure who the knowledgeable person is, be sure to ask your supervisor. Typically, the decision to enforce shortened work periods and longer rest periods will take into account several factors including:

- Increasing air temperature
- Increasing humidity
- Elevated heat index which is an indicator of both the air temperature and relative humidity
- Amount of air movement or breeze
- Sun becoming stronger as the day progresses.
- The use of protective clothing or gear
- How heavy or strenuous the work that is to be done.

SAFETY TALK

Work/Rest Schedules

- When a worksite is under work/rest periods some workers will need to be monitored more closely; those that are new to the job and those that are unacclimatized. To help ensure their safety, these workers should be assigned lighter work tasks as well as longer rest periods than those that are fully acclimatized.



There is no single, set work/rest schedule. The time ratio of work to rest will vary depending upon the weather conditions on any day. Work/rest cycles are most effective when there are more frequent, shorter periods of exposure to heat.

Most often work/rest schedules are based on 1-hour cycles; so in moderately hot weather the cycle may be 45/15. This means that there is 45 minutes of work followed by a 15-minute rest period. However, in more extreme conditions the cycle could be 25/35 or 25 minutes of work and 35-minute rest period.

Following a work/rest schedule does not ensure that you will not become a victim of a heat-related illness. It is important that you and your coworkers be aware of the symptoms of heat-related illness and watch out for each other. It is common that the person suffering from heat-related illness doesn't recognize the symptoms in themselves and can wind up with a much more severe issue. By looking out for one another, you can help prevent this from happening.



Discussion Questions

- What are appropriate activities to participate in during the rest periods?
- What should you do if a coworker is showing signs of heat related illness?

