Preventing Heat Stress

Hot conditions put your body under a lot of stress. Physical activity stresses the body even more. When heat is combined with physical activity, loss of fluids, fatigue, and other conditions can lead to a number of heat-related illnesses and injuries. Death is even possible. This week's **Tail Gate Safety Topic** discusses ways to prevent heat stress and how to recognize the symptoms of a number of heat-stress conditions.

Heat stress is commonly associated with warm weather. It's true that warm weather increases the number of heat-stress injuries and illnesses. Warm weather isn't the only cause of heat stress, though. Heat stress can occur any time the surrounding temperature is elevated. Even if the weather is cool, you may work in warm areas, indoors or out. Be alert for conditions which could cause heat stress and take precautions to prevent it. Six main factors are involved in causing heat stress:

- temperature
- humidity
- movement of air
- radiant temperature of the surroundings
- clothing
- physical activity

Adjusting to these factors and/or controlling them reduce the chance of heat stress. Your body can adjust to working in a warm environment through a process known as "acclimatization." Acclimatization processes involve gradually increasing the amount of time you spend working in a hot environment. This gradual increase allows your body to properly adjust to the heat.

Keep in mind, though, even if you're already acclimatized, conditions can change which stress your body even more. Bright sunshine, high humidity, and sources of heat in the workplace can affect your body's ability to cool itself. If conditions change, make sure you re-acclimate yourself to the new conditions. If you're away from work for a few days or if you experience a brief period of cooler temperatures while working, you will need to re-acclimate yourself before you try to work the full shift in the hot conditions.

Engineering controls can be implemented to reduce the possibility of heat stress. These include:

- control the heat source through use of insulation and reflective barriers
- exhaust hot air or steam away from the work area
- use of air-conditioning
- use of air-conditioned rest areas
- use of fans to circulate the air
- reduce the physical demands of the work by using mechanical equipment
- Administrative controls are also effective to prevent heat stress injuries. These include:
- increase the frequency and duration of rest breaks
- schedule tasks to avoid heavy physical activity during the hottest parts of the day

- provide cool drinking water or an electrolyte-replacement drink and encourage its consumption
- use additional workers for the job or slow down the pace of the work
- make sure everyone understands the signs and symptoms of heat stress

Other precautions, such as dressing properly for the job, include:

- wear lightweight clothing which allows moisture to evaporate quickly
- wear reflective clothing or cooling suits for jobs which require them
- use extra caution if you are required to wear clothing on the job which limits evaporation--you could succumb to heat stress much more quickly

There are a number of types of heat stress injuries. Some are annoying but not very serious. Others can quickly lead to life-threatening situations. Knowing what to look out for is important. This is especially true because the more serious heat stress conditions cause the victim to become disoriented and unaware of their condition. People who are overweight, physically unfit, suffer from heart conditions, drink too much alcohol or are not acclimated to the temperature are at greater risk of heat stress and should seek and follow medical advice.

The major heat stress injuries and illnesses are described here:

Heat Rash is caused by a hot, humid environment and plugged sweat glands. It is a bumpy red rash which itches severely. It is not life-threatening but is very annoying. Dry clothes that help sweat evaporate will reduce the chance of heat rash. Washing regularly and keeping the skin clean and dry will help prevent heat rash.

Heat Cramps are painful muscle cramps caused by a loss of body salt through excessive sweating. To help prevent heat cramps, drink plenty of non-alcoholic, caffeine-free fluids while working in a hot environment. Check with your doctor about the use of salt tablets. They may be recommended in some cases. Anyone suffering from heat cramps should be watched carefully for signs of more serious heat stress. If the cramps persist or other symptoms develop, seek medical attention immediately.

Heat Syncope (pronounced "sin-co-pay") is sudden fainting caused by a reduced blood flow to the head. The victim's skin will be cool and moist and their pulse will be weak. Immediate medical attention is needed in the event of syncope.

Heat Exhaustion results from inadequate salt and water intake and is a sign the body's cooling system is not working properly. The victim will sweat heavily, their skin will be cool and moist, their pulse weak, and they will seem tired, confused, clumsy, irritable or upset, they may breathe rapidly--even pant--and their vision may be blurred. The victim may strongly argue that they are okay even with these obvious symptoms. If you suspect heat exhaustion, don't let the victim talk you out of seeking immediate medical attention. The heat exhaustion will affect their ability to exercise good judgment. Until medical help arrives, try to cool the victim and offer sips of cool water as long as the

victim is conscious. Immediate medical attention is required. Heat exhaustion can quickly lead to heat stroke.

Heat Stroke is the deadliest of all heat stress conditions. It occurs when the body's cooling mechanism has shut down after extreme loss of salt and fluids. The body temperature will rise, the victim's skin is hot, red, and dry, their pulse fast, and they may complain of headache or dizziness. They will probably be weak, confused, and upset. Later stages of heat stroke cause a loss of consciousness and may lead to convulsions. In the event of heat stroke, seek immediate medical attention. Until help arrives, try to cool the victim and offer sips of cool water if the victim is conscious.
Recognizing the symptoms of heat stress is very important, particularly since the victim may not realize what is happening. If you work alone in a hot environment, develop a "buddy system" so someone will check in on you periodically to look for signs of heat stress.

Preventing heat stress is a matter of controlling the factors that cause it. Use the precautions mentioned in this article, and don't hesitate to seek assistance if you suspect heat stress. your good health depends on it!