RICOSH HAZARD ALERT

Heat Stress: Can be a Dangerous Companion

Employers and workers need to be aware that heat stress can happen well before temperatures reach official limits for workplace safety. The "heat index" is a measure of how hot it really feels when humidity is taken into account. Traditionally many authorities warn that workers are at risk of heat stress when the heat index reaches 91 degrees Fahrenheit (32.8 degrees Celsius) or higher.

But an analysis of 25 incidents of outdoor worker illnesses and deaths shows that the risk can rise at a heat index of just 85 degrees F (29.4 C). Six deaths happened at heat indexes below 90 degrees F. *"Heat-related illnesses can and do occur on days that aren't particularly hot. An average summer day, with a temperature in the 80s, can fatally injure workers if proper precautions are not taken,"* said lead author Dr. Aaron Tustin of the U.S. Department of Labor's Occupational Safety and Health Administration (OSHA) in Washington, D.C."When working in warm or hot weather, take precautions to avoid heat stroke," Tustin "Don't wait until the temperature is above 90."

Heat's Hidden Hazards

Hot weather can provoke several different illnesses, but one, *heat stroke*, is a major medical emergency. The body produces heat internally (metabolic processes) and receives it externally (sun, humidity, heat producing equipment, and high temperatures and activity). A cooling system has evolved to avert injury. This system is finely tuned to maintain core body temperatures by sweating. As sweat evaporates it carries heat away from the body. An active person can lose a quart or two of water an hour in hot environments. (Hazardous waste a, chemical emergency response workers and firefighters are at high risk since they must wear layered protective clothing that interferes with the body's sweating/cooling mechanism.)

Heat stroke results from the breakdown of the body are cooling system. The cooling system works by maintaining the body's core temperatures at safe levels. But the cooling system can become overwhelmed when humidity and temperatures are constantly high as in a heat wave. When that happens, a person will usually stop sweating altogether --though not always. Many workers have incorrectly been taught that as long as they were still sweating, they were not in danger of heat stroke. Core body temperature escalates. Pulse is rapid and strong, throbbing headache and dizziness, nausea, confusion may all, or individually, be present. Kidney, brain and liver injury may result. And, death can result. Heat stroke is now classified as either classic heat stroke or exertional heat stroke which is more common in workplace settings. Characteristics of the individual (e.g., age and health status), type of activity (e.g., sedentary versus strenuous exertion), and symptoms (e.g., sweating versus dry skin) vary between these two classifications. It important to understand that it isn't just temperature that is the factor into what constitute 'hot weather'; humidity is also a major factor, as is it exertion in combination with exposure to sunlight and sources like equipment and machinery that generate radiant heat.

Some Elements of a Heat-Healthy Program for Workers:

When unacceptable levels of heat stress occur, there are several approaches to a solution. In a controlled environment, engineering controls, including increasing ventilation, bringing in

cooler outside air, reducing the hot temperature of a radiant heat source, shielding the worker, and using air conditioning equipment can reduce threats from heat stress. Heat stress can also be administratively controlled through limiting the exposure time (e.g., work/rest schedules), reducing metabolic heat load, and enhancing heat tolerance (e.g., acclimatization). Additional preventive strategies against heat stress include establishing a heat alert program and providing auxiliary body cooling and protective clothing. A Heat Index of 85°F (29.4°C) could be used as an action threshold to implement a heat- healthy program. The following is a basic checklist for a heat-healthy program: -

Regular hydration (fluid intake) is vital. But water and sports drink intake alone will not prevent heat illnesses. It is also important to adjust the work environment and regimen. Adjust how strenuous the work is, work clothing and equipment, the effects of direct sunlight and other conditions at the work site.

- *Take frequent rest breaks. If you work outdoors try to take these breaks inside or in a cool shaded area. The hotter it gets, take more and longer breaks.*
- *Schedule heavy work at cooler times.*
- *Workers and staff should have time to adjust to hot environments.*
- *Shield machinery or equipment that produces heat.*
- *Supply portable general ventilation and spot cooling in hot work areas.*
- *Providing cooling protective clothing (e.g., water-cooled garments, air-cooled garments, cooling vests, and wetted overgarments).*
- *Eat smaller meals and avoid sugar, caffeinated drinks, and alcohol.*
- *Provide training and select a crew or staff member for specific emergency medical training on how to handle a victim of heat stroke.*
- *Review hazards and precautions when a heat wave is predicted.*

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