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| <h1>Safety Talk</h1> | Topic: | Heat Stress |
| | Delivered by: | |
| | Date: | |

In preparation, list any **Incidents** or **Near Misses** that have occurred relating to the safety talk topic of discussion listed above. These events should be discussed following the delivery of the topic.

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HEAT STRESS AND THE HUMAN BODY

The human body functions best within an internal temperature range of 36 to 38 degrees Celsius. Above or below this range, the body's temperature control centre will do what it can to warm or cool the body. This usually involves shivering to keep warm or perspiring to keep cool.

As the surrounding air warms, the body pumps more blood to the skin and increases sweat production. In this way the body loses heat, to balance the heat gain. When the heat gain becomes more than the body can lose, body temperature begins to rise and may lead to a heat-related illness.

There are Environment Canada guidelines that give directions as to what employers and workers might do in heat related conditions.

Sources of Heat Gain and Heat Loss

Metabolic heat - the body's own internal heat, generated by the breakdown of food to form energy caused by the activity level. Hard work in a hot environment contributes to the body's heat load.

SAFETY TALKS



Conduction - the direct transfer of heat to the body by direct contact with a warm object. Generally, an almost insignificant source of heat when considering heat gain to the body.

Convection/Radiation - the exchange of body heat with the surrounding air that comes into contact with the skin. If the air is warmer than the body temperature, it will increase the heat load.

Evaporation - evaporation of sweat from the skin cools the body. As temperature, humidity and rate-of-work go up, so does the rate of sweating. At very high humidity however, sweat does not evaporate as quickly. High air speed and low humidity increases evaporation. If it is very hot and dry, excessive sweating may lead to dehydration (excessive fluid loss).

WORKING IN HOT CONDITIONS

Dehydration is a common problem from working in heat. Dehydration is caused by failure to replace salt and water lost from sweating. Although sweating is necessary to help cool the body, the fluid and salt loss must be replaced.

On average, one to two cups of water per hour is required to replace fluid lost from heavy sweating. Cool but not cold, fluids should be provided, in a location convenient to workers. Regulation 851 S.132 specifies drinking fountain location requirements. Because the feeling of thirst may not be enough to ensure adequate fluid intake, workers in hot environments should be encouraged to drink at least one cup per hour. Too much fluid (more than two cups) should not be taken at one time since workers may develop abdominal cramps.

The use of table salt and naturally occurring salt in foods is usually enough to replace salt lost through perspiration. However, the use of athletic beverages such as Gatorade or Powerade can also be beneficial to replace fluids and maintain electrolyte levels. Fruit and vegetable juices are good sources of 'natural' salt. Workers on a salt-restricted diet should explain their working conditions to their doctor and discuss the need for extra salt. Sugary and/or carbonated drinks such as soda pop, and fluids containing caffeine and alcohol should be avoided as these tend to dehydrate the body and give a false sense of being properly hydrated.

HEAT-RELATED ILLNESSES

The body may react to excessive heat in several ways and these reactions will vary from person to person.

Heat cramps are painful spasms of the muscles. The muscles used in doing the work are most susceptible. The spasms are caused by the failure of the body to replace its lost body salts and usually occur after heavy sweating.

Heat exhaustion results when the body loses large amounts of fluid by sweating during work in hot environments. The skin becomes cool and clammy. Symptoms include profuse sweating, weakness, dizziness, nausea, and headaches.

Heatstroke is the most serious condition and requires immediate medical attention. The body stops sweating, and its temperature becomes very high (even exceeding 41°C). Symptoms include hot and dry skin, and can progress to delirium, convulsions, coma and death.

Factors Contributing to Heat-Related Illnesses

There are numerous factors other than the environment and work-load, that influence the body's ability to acclimatize and cope with heat. These factors may contribute to the onset of a heat-related illness and should be taken into consideration when situating workers and deciding on control measures.

Lack of acclimatization - the body has not had sufficient time to adjust, or other factors prevent the body from adjusting to the heat.

General state of health - Medical conditions may be a factor in causing heat illness, or may be aggravated by heat: Skin disorders, heart and lung diseases, diabetes, diarrhea, obesity.

Medication/drugs - can affect the body's responses to heat, and may affect acclimatization. Different medications/drugs may affect different parts of the body. The use of alcohol the evening before the work shift, can lead to dehydration even before heat exposure.

PREVENTION & CONTROL MEASURES

The risk of heat-related illnesses can be reduced by preventive and control measures:

- ✓ Engineering controls to provide a cooler workplace.
- ✓ Administrative controls to reduce exposure and recognize symptoms of heat-related illness.
- ✓ Personal protective equipment when necessary for further limiting of exposure.

Treatment/Prevention

The following ideas may aid in combating heat stress disorders:

1. Employees accustomed to working in the heat are better candidates for job assignments where heat stress disorders may occur.
2. Allow employees to take frequent breaks to cool down until they acclimate to the high temperatures,

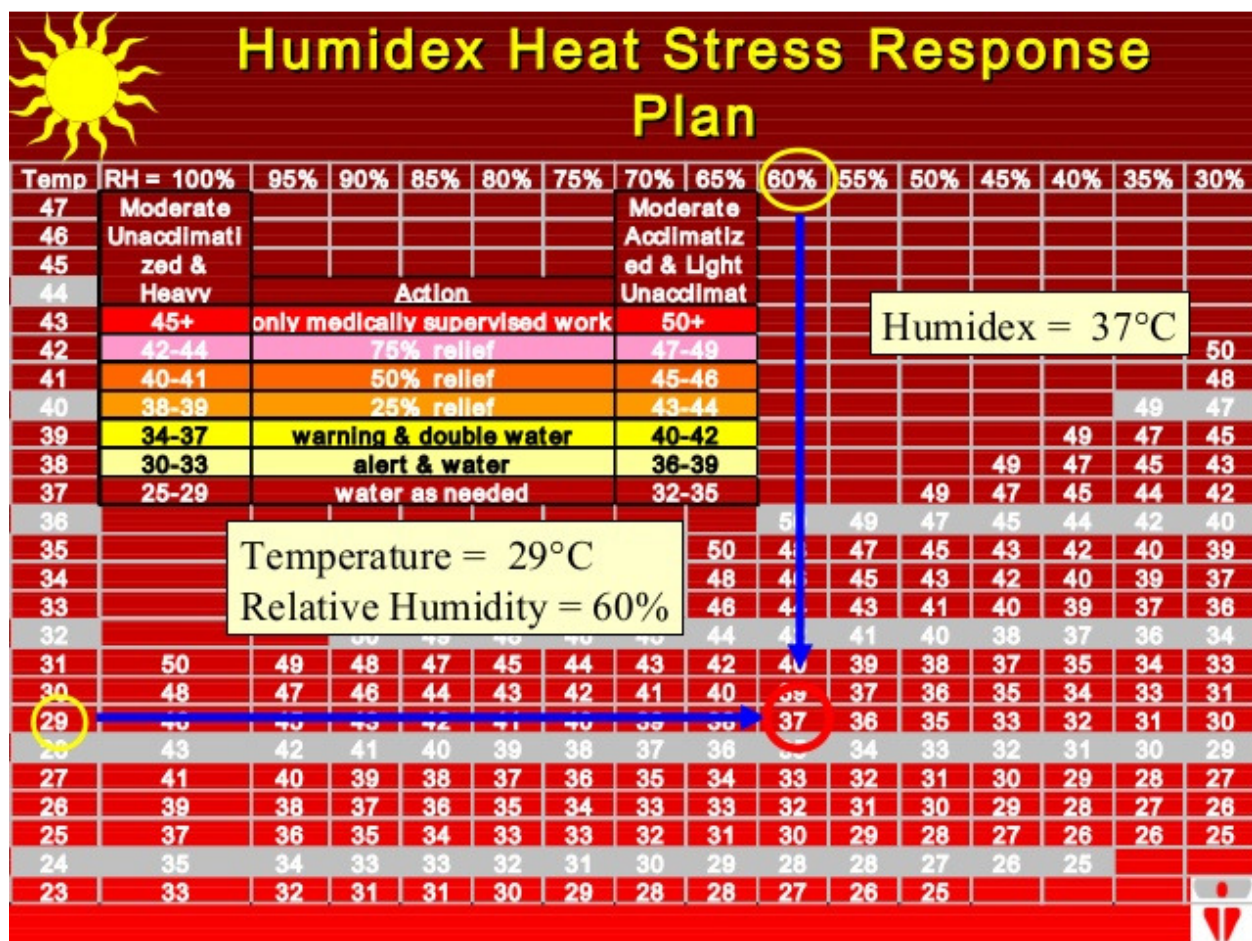
SAFETY TALKS



3. Employees should be rotated from the exposure area to a non-exposure area on a regular basis to help in avoiding heat stress symptoms.
4. If an employee appears to be suffering from heat stress disorder, remove him or her from the heat and provide a cool, shaded place to rest.

**If the employee is disoriented or non-responsive,
call for medical attention immediately.**

Here is a chart to help understand how to respond to the environmental conditions which will contribute to a worker's Heat Stress;



The Humidex is calculated by the actual temperature combined with the relative humidity of the air. The higher the humidity, the less opportunity your sweat has to evaporate into the air because it's already so saturated with humidity. For example, if you were to be looking at a humidex rating of 42°, the workers should be given 50% break, i.e. 30 minutes of work and 30 minutes of break.

SAFETY TALKS



Discuss what work we will be doing that puts us at risk:

Discuss what controls we have in place to protect our workers from heat stress/exhaustion.

SAFETY TALKS



Training Attendance Form

We hope you have learned from this safety discussion on Working in the Heat. By signing the below, you are indicating that you participated in the safety talk and that you understand the hazards associated with the subject we have discussed and that you know that if you have any questions or concerns, you can contact your supervisor or safety rep. Remember, when it comes to safety, do the right thing because it is the right thing to do.

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