

Heat Stress in the Shipyard Environment

NSRP Meeting

June 11, 2009

Alan Ridenoure M.Ed., ATCL/L, CSCS

Presented by Yaniv Zagagi

Atlantic Marine Alabama & Florida, LLC

SHIPYARD WORKERS

- Are they much different than athletes when exposed to heat?
- No!
 - They are actually more susceptible to heat illness because of their habits, attitudes, and behaviors.
 - And they work in an environment conducive to heat illness.

Factors that contribute to increased heat in a shipyard

- Geography
 - South Alabama vs. ???
- Tools
 - Torches and Welding Equipment
- Work Environment
 - Steel Plate, Confined spaces, non A/C shops
- Required Clothing and PPE
 - Long sleeves, gloves, respirators

How does the body cool itself?

Body Cooling Mechanisms

- **Conduction:** losing heat through physical contact with another object or body.
- **Convection:** losing heat through the movement of air or water molecules across the skin.
- **Evaporation:** losing heat through the conversion of water to gas (evaporation of sweat).

Controls that can be put into place

- Engineering Controls:
 - Ventilation, A/C units
- Acclimatization:
 - Allowing workers time to adjust to heat
- Weather Conditions
 - Adjusted work schedules/times in peak months
- Work/Rest Cycles
 - Per OSHA requirements (SECTION III: CHAPTER 4)
- Personal Protective Equipment
 - Lighter colored hard hats, lighter colored clothing
- Fluid Intake
 - 7-10 oz. ever 10-20 minutes of CORRECT TYPE of fluids
- Training
 - Recognition of signs and symptoms of heat illness

Correct Hydration:

What to drink vs. what to leave at home

- What to drink and why:
 - Water, Gatorade, Powerade, Sqwincher,
 - Contains the three things needed to fuel muscles to keep them from cramping
 - Water (Transporter for NaCl, K, Sugars)
 - Sodium (Electrolyte as a fuel source)
 - Potassium (Electrolyte as a fuel source)
 - Magnesium (Electrolyte as a fuel source)
 - Sugar (Carbohydrates as a fuel source)
- * Make sure all people consult their personal physicians if they have a medical condition that may restrict sugar and/or sodium intake.

Correct Hydration:

What to drink vs. what to leave at home

- What not to drink and why
- Caffeinated/Carbonated beverages (Dehydrating)
 - This includes Coke, Sprite, Pepsi, Mountain Dew and ENERGY DRINKS!
- Juices (No electrolytes, high sugars)
- Alcohol: (Obviously not while at work but too many at home can lead to dehydration the next day)

Points to remember

- Heat Illness is a compounding type of injury. It has a lot of factors that contribute to it that might not all be obvious.
 - By compounding, this means that day after day in the heat can cause fatigue, poor rehydration and cooling after work can contribute to the body running out of fuel and succumbing to heat illness.
- **HEAT ILLNESS CAN STILL OCCUR EVEN IF SOMEONE IS 100% HYDRATED**
 - When it is hot outside, the body's internal temp rises and this is accelerated with increased work/activity.

So, is this preventable?

- Yes!
- It is a matter of **cooperation** and **communication** of everyone involved with the well being of the employees-**INCLUDING THE EMPLOYEES THEMSELVES!**
- 100 % Preventable...only if there 100% Proper Participation

Thank you!

