TO :
FROM : National Wildfire Coordinating Group
REPLY TO : NWCG@nifc.gov
DATE : 09/13/2011
SUBJECT : SAFETY ADVISORY : Hyperthermia

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Safety Alert: Hyperthermia

On July 7, 2011, a BLM firefighter died on the CR 337 fire in Palo Pinto County, Texas. The autopsy determined the cause of death was hyperthermia. An interagency Serious Accident Investigation (SAI) is currently underway. Although the investigation report is not fully completed, a preliminary finding of the investigation team warrants immediate communication to firefighters. That preliminary finding is that the firefighter showed no obvious signs of heat illness prior to his collapse on the fireline.

The key message of this safety alert is that firefighters must be vigilant about even the most minor signs and symptoms of heat illness and that effective preventive and corrective action must be taken as necessary.

Hyperthermia
Hyperthermia is an elevated body temperature due to failed thermoregulation. Hyperthermia occurs when the body produces or absorbs more heat than it can dissipate. When the elevated body temperatures are sufficiently high, hyperthermia is a medical emergency and requires immediate treatment to prevent disability or death.

Hyperthermia is associated with heat illnesses (heat cramps, heat exhaustion, and heat stroke). For more information on heat illnesses, refer to MTDC Tech Tip, "Heat Illness Basics for Wildland Firefighters": http://www.fs.fed.us/t-d/php/library_card.php?p_num=1151%202S06

Signs and Symptoms
Hot, dry skin is a typical sign of hyperthermia. The skin may become red and hot as blood vessels dilate in an attempt to increase heat dissipation, sometimes leading to swollen lips. An inability to cool the body through perspiration causes the skin to feel dry.

Other signs and symptoms vary depending on the cause and level of heat illness. Severe heat illness can produce nausea, vomiting, headaches, increased heart rate and low blood pressure. This can lead to fainting or dizziness, especially if the person stands suddenly.

Prevention
Prevention of heat illness is the best way to avoid its consequences. Here are some guidelines for firefighters:

- Hydrate before, during and after work.
- Drink at least 1 quart of water per hour during strenuous exercise or work.
- About one third to one half of the liquid consumed during a work shift should be a sports drink such as Gatorade, for the purpose of replenishing fluids, electrolytes and carbohydrates. Avoid "energy drinks" such as Red Bull, Monster and RockStar…they are NOT sports drinks.
- Monitor your hydration status by observing urine output and color: pale yellow or wheat color is normal. A lighter color is a sign of over hydration; low volume or dark yellow or brown urine is a sign of dehydration
- Rotate high exertion duties when possible
- Be able to recognize the symptoms of heat illness in yourself and others – if you are feeling overexerted – STOP! Muscle movement is the largest heat producing source in the body.
- If you still have symptoms, notify co-workers or supervisor immediately.

Important note: Although hydration is a critical component of preventing heat illness, an adequately hydrated individual can still experience hyperthermia.

Treatment
Treatment will vary depending upon the severity of the hyperthermia and the availability of treatment options. Treatment actions, from minor to major, include:

- Stop work activity
- Loosen clothing
- Cool down individual, consider options:
    - Move to air conditioned vehicle or facility (shading, fanning, or misting may have limited, to no effect)
    - Immerse in cool or ice water if available (e.g., porta tank)
    - Place ice packs on the groin, arm pits, and neck
- Use IV fluids to restore blood flow to the extremities
- Implement Emergency Medical Plan and conduct rapid medevac if needed.

Hyperthermia is a medical emergency. Ignoring or delaying the need for medical attention could lead to permanent disability and even death.

Individuals who are treated for heat illness and returned to full duty too quickly will be susceptible to heat illness recurrence. Follow physician return to duty recommendations.