



Heat Related Illness FACTS



(SAFETY COMMUNICATION 2009-2)

Fit firefighters are safe firefighters and regular physical fitness training is a component of a professional firefighter's work day. While some heat illnesses are less severe and are easily treated by resting, cooling down and drinking water, others can be life-threatening or lead to permanent disability. Periods of low fire activity or below normal temperatures can result in complacency regarding the everyday hazards encountered by firefighters conducting Physical Training (PT) or fire suppression activities. Several firefighters in California have already experienced severe heat related illnesses this year. **Don't let this happen to you!**

Heat Illness and Physical Training

In physical pursuits like training to be a firefighter, or participating in most sports, **hydration matters**. In most cases, actions taken by you on the days prior to your work shift(s) can set you up to be dehydrated. Additionally, your overall fitness level and acclimation also play a role.

According to the National Institutes of Health, heat emergencies fall into three categories of increasing severity: **heat cramps, heat exhaustion, and heatstroke**. If the problem isn't addressed, heat cramps (caused by loss of salt from heavy sweating) can lead to heat exhaustion (caused by dehydration), which can progress to heatstroke. Heatstroke, the most serious of the three, can result in shock, brain damage, organ failure, and even death.

These early symptoms may indicate the onset of heat illness:

- Profuse sweating
- Thirst
- Muscle cramps
- Fatigue

Later symptoms of heat exhaustion include:

- Headache
- Dizziness and lightheadedness
- Weakness
- Nausea and vomiting
- Cool, moist skin
- Dark urine

The symptoms of heatstroke include:

- Fever (temperature above 104 °F)
- Dry, hot, and red skin; sweating may cease
- Irrational behavior
- Extreme confusion
- Rapid, shallow breathing
- Rapid, weak pulse; possible decrease in blood pressure
- Seizures
- Unconsciousness

Risk Mitigations for Physical Training and Hard Work

Hydrate before, during and after exercise and continuously through the day. 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. "Energy drinks" such as Red Bull, Monster and RockStar are NOT sports drinks.

Monitor your hydration status by observing urine color: pale yellow or wheat color is normal. A lighter color is a sign of over hydration; dark yellow or brown urine is a sign of dehydration. Be aware of unusual body odor especially in the case when it smells like ‘ammonia’ – this could be a sign of rhabdomyolysis.

Monitor body weight pre- and post-exercise. Weight loss during activities is primarily water loss; any loss of greater than 2% of pre-exercise weight can be detrimental.

Practice good nutritional habits. Monitor salt intake during high heat stress conditions and ensure electrolyte replacement. Eat several small meals a day rather than three large meals for higher energy and more optimal metabolism,

Ensure that your PT program is balanced and supports muscle balance. There have been cases of compartment syndrome related to overuse of certain muscles along with other factors. Always be sure to warm up and cool down appropriately, especially during any adverse weather conditions and monitor the Heat Stress Index when doing PT.

Be able to recognize the symptoms of heat illness in yourself and others – if you are feeling overexerted – STOP! Hydrate and try to lower your heart rate. Oftentimes feeling ‘thirsty’ means that you are already dehydrated.

If you still have symptoms, notify co-workers or supervisor immediately. Immediately treat heat illness if it occurs. Ignoring or delaying the need for medical attention could lead to permanent disability and even death.