

## **ERGONOMICS: EXTREME TEMPERATURE WORK**

Extreme temperatures can cause various problems for workers. Hot temperatures can lead to dehydration and muscle fatigue, especially in conjunction with high humidity. Cold temperatures make the muscles less flexible, resulting in muscle strains and pulls. Problems may include trouble breathing, fatigue, reduced dexterity, sensory sensitivity and reduced grip strength.

Hot or cold work environments do not necessarily need to be outdoors. Any location that is outside of the typical comfort zone of 55 to 85 degree Fahrenheit is cause for concern.

### **Hot Environment**

When you are subjected to a high-heat environment, your internal body temperature rises resulting in your body's attempt to regulate its temperature through increased blood circulation and increased perspiration. Relatively less blood goes to the active muscles, brain and other internal organs, which reduces strength and brings on fatigue more quickly. If your body is prevented from cooling down, it will continue to try to cool down and expend more energy, increasing fatigue. Heat stroke and heat exhaustion are the most serious health issues caused by working in hot environments. Heat stroke can be fatal and victims usually do not recognize the symptoms. While the symptoms vary from person to person, they include dry, hot skin, an elevated body temperature and ultimately a partial or complete loss of consciousness. Heat exhaustion is caused by a loss of body fluid through excessive sweating. Symptoms include heavy sweating, weakness, dizziness, intense thirst, nausea, headache, vomiting, diarrhea, muscle cramps and possibly palpitations.

The best solution to working in a hot environment is to remove yourself from the environment or reduce the temperature. This should be attempted first by increasing ventilation and/or cooling or providing heat shields, as appropriate. This is not always practical and other solutions may have to be employed to mitigate the impact of the heat. Alternating work or implementing a work-rest schedule may provide relief.

- Drink fluids, preferably water, throughout the day to replace lost water.
- Limit your caffeine intake.
- Protect yourself when working outdoors by covering up as much as possible.
- Wear lightweight, breathable fabrics.
- Perform strenuous work during the coolest times of the day, reserving lighter tasks for the high-heat periods.
- Take rest periods to allow your body time to cool off.
- Know the signs of heat stress and heat exhaustion.

## **Cold Environment**

Low temperatures reduce sensory feedback, dexterity, blood flow, muscle strength and balance. This can impact performance of complex mental and physical tasks and may even lead to potentially lethal side effects. A cold environment takes away body heat, which can result in a lowering of the inner body temperature to dangerously low levels. Hypothermia is a common cold injury associated with low body heat. This occurs when your body loses energy faster than it is produced, dropping your body temperature. Warning signs are numbness, stiffness, drowsiness and poor coordination. Frostbite is another common cold injury, which typically affects the nose, ears, cheeks, fingers and toes. The low temperature constricts blood vessels, which impairs blood flow and may cause permanent tissue damage. If damage is only to the skin and underlying tissue, complete recovery may be expected. However, if blood vessels are affected, the damage may be permanent and could result in amputation of the affected body part.

To cope with working in a cold environment you should stay active, dress warmly and follow basic safety rules. Working in a cold environment increases the risk of back injuries and other musculoskeletal injuries. Perform warm up stretching exercises before doing heavy work or handling heavy equipment and materials.

- Dress in multiple layers of loose, dry, protective clothing.
- Ensure that your hands, feet, face, head and eyes are covered.
- Avoid getting wet.
- Keep moving to help your body stay warm.
- Take regular breaks in a warm location.