Cold Stress
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Objectives

- Cold stress
- How to avoid cold stress
- Frostbite
- Hypothermia
- Trench foot
- Preventative measures
Exposure to Cold

- Outdoors on a cold day
- Refrigerated room
- Unheated building
- Vehicle breakdown
- Working in cold water
- Handling cold objects or materials
Factors Contributing to Cold Stress

• Wind chill
  – Cooling effect of wind on the skin along with cold temperature
  – Air temperature of wind is 40° F and velocity is 35 mph, skin feels conditions equal to 11° F

• Cold temperatures

• Dampness

• Contact with cold water or surfaces
Effects of Cold on the Body

- Cold forces the body to work harder to maintain temperature.
- Cold air, water, and snow draw heat away from the body.
- Blood flow will shift from extremities and outer skin to the core of the body.
- Cold creates an increased risk of frostbite and hypothermia, and even trench foot.
Risk Factors for Cold Stress

- Physically unfit
- Chronic Illness, especially heart disease
- Aging—elderly are more vulnerable to cold
- Drinking alcohol or taking drugs
- Fatigue
- Vibration from tools on job
- Inappropriate clothing
- Not conditioned to working in cold
Effects of Cold on the Body

• Shivering—body trying to get warm
• Numbness—fingers, toes, ears, nose
• Dehydration
• Frostbite
• Hypothermia
• Trench foot
Frostbite

- Skin freezes and loses water
- Can occur in 15 minutes when wind chill is 18 below zero or colder
- Predisposition to frostbite:
  - Exhaustion
  - Hunger
  - Prolonged exposure to cold
- Amputation may be required in serious cases.
Frostbite

- Symptoms
  - Cold, white, and hard skin
  - Pain
  - Itching or tingling of affected body part
  - Loss of feeling in the affected area
  - Colored spots or blotches on skin
  - Swelling and blistering
  - Tissue loss, depending on severity
Frostbite

• Treatment
  – Do:
    • Wrap affected area in a soft, smooth cloth.
    • Move to a warm area.
    • Call 911.
  – Don’t:
    • Rub area.
    • Be left alone.
    • Expose skin to flame.
Hypothermia

- Means “low heat”
- Severe or prolonged loss of body heat
- Body temperature 95°F or below
- Predisposition to hypothermia
  - Cardiovascular disease
  - Diabetes
  - Hypertension
  - Medications
  - Poor physical condition
Hypothermia

- Symptoms
  - Body temp falls below 98.6° F to about 95° F
  - Confusion
  - Drowsiness
  - Slurred speech
  - Drop in blood pressure
  - Shallow breathing
  - Pinkish tint to skin
Hypothermia

• Treatment for mild cases
  – Move to warm area; stay active.
  – Remove/replace wet clothes.
  – Cover head.
  – Drink warm sugary beverage.
Hypothermia

• Treatment for severe cases
  – Body temperature falls to 85° F to 78° F.
  – Perform same treatment as for mild cases.
  – Call 911—seek immediate medical attention.
  – Cover all extremities.
Trench Foot

- Name came from soldiers in World War 1
- Infection of the feet
- Caused by having feet immersed in cold water or snow for long period of time
Trench Foot

• Symptoms
  – Numbness
  – Tingling
  – Itching
  – Burning
  – Blisters and open sores
  – Can result in gangrene
Trench Foot

• Treatment
  – Soak feet in warm water.
  – Wrap with dry cloth bandages.
  – Drink warm sugary beverage.
Dress for Safety

• Follow this advice:
  – Wear at least three layers of clothing.
  – Wear a hat—heat is lost through a bare head.
  – Wear insulated/waterproof footwear.
  – Keep a change of dry clothing.
  – Change clothes if they get sweaty.
  – Do not wear tight clothing.
Controls to Reduce Cold Stress

- Have an on-site heat source.
- Shield work area from drafts and wind.
- Use insulating materials.
- Provide heated shelter for workers.
Minimize the Risk of Cold Stress

- Recognize environment or weather conditions.
- Learn signs and symptoms.
- Learn effective treatments.
- Wear appropriate dress.
- Avoid alcohol, certain medications, and smoking.
Minimize the Risk of Cold Stress

• Drink plenty of fluids.
  – Soup
  – Water
  – Limited caffeine

• Eat high-calorie foods.
  – Hot pasta dishes

• Schedule heavier work during warmer parts of day.
Minimize the Risk of Cold Stress

- Work in pairs.
- Rotate jobs to limit exposure.
- Take frequent heated breaks.
- Learn to recognize the signs of cold stress.
Additional Information

• Cold Stress, Occupational Health and Safety Administration, Safety and Health Guides.

http://blueridgeservices.com/
Cold weather phase 1 and 2 videos