

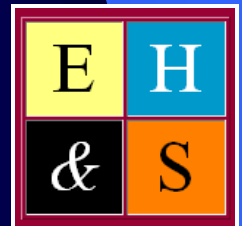


Facilities Management

Environmental Health & Safety

presents

Cold Environment Activities



Avoiding Cold Weather Injuries is Everybodys Business!

All cold weather
injuries are preventable!!!



How your body produces and loses heat.....

- Body heat is produced by:

- metabolism
- exercise
- shivering

- Body heat is lost by:

- convection
- conduction
- radiation
- respiration
- evaporation



Susceptibility Factors.....

- Previous cold weather injury
- Inadequate nutrition
- Alcohol, caffeine, nicotine
- Dehydration
- Overactivity
- Underactivity
- Long exposure to the cold

- Sick or injured
- Acclimatization
- Wind, cold, rain
- Age
- Physical stamina
- Inadequate clothing

Types of Cold Injuries.....

- Hypothermia
- Frostbite
- Chilblains
- Dehydration

- Sunburn
- Snow Blindness
- Carbon Monoxide Poisoning



Hypothermia.....

This is a **MEDICAL EMERGENCY** and a life threatening condition and severe body heat loss-body when temperature falls below 95F.....

- **It can occur when:**

- conditions are windy, clothing is wet, and/or the individual is inactive, or.....
- extended water exposure or immersion
 - 1 hour or less when water temp is below 45°F
 - prolonged exposure in slightly cool water (e.g. 60°F)
 - thunderstorms, hail, rain and accompanying winds

Hypothermia

The “umbles”-stumbles, mumbles, fumbles, and grumbles.

● Initial Symptoms

- shivering
- dizzy, drowsy
- withdrawn behavior
- irritability
- confusion
- slowed, slurred speech
- altered vision
- stumbling

● Severe Stages

- stops shivering
- desire to lie down and sleep
- heartbeat and breathing is faint or undetectable
- unconsciousness followed by DEATH

Hypothermia.....

● Treatment

- prevent further cold exposure
- evacuate immediately if severe hypothermia
- remove wet clothing
- rewarm with body-to-body contact or in a warmed sleeping bag
- warm, sweet liquids if conscious
- give CPR if needed



Hypothermia.....

● Prevention

- eat properly and often
- warm liquids (noncaffeinated) and water
- wear proper clothing (layers worn loosely)
- keep active
- stay dry
- get plenty of rest
- buddy watch

BODY TEMP	SYMPTOMS	OBSERVABLE IN OTHERS	FELT BY YOURSELF
(Early Stage) 98.6 ⇒ 95.0	Intense and uncontrollable shivering; ability to perform complex tasks impaired	Slowing of pace. Intense shivering. Poor coordination.	Fatigue. Uncontrollable fits of shivering. Immobile, fumbling hands.
(Moderate Stage) 95.0 ⇒ 91.4	Violent shivering persists, difficulty in speaking, sluggish thinking, amnesia begins to appear.	Stumbling, lurching gait. Thickness of speech. Poor judgment.	Stumbling. Poor articulation. Feeling of deep cold or numbness.
(Severe Stages) 91.4 ⇒ 87.8	Shivering decreases; replaced by muscular rigidity and erratic, jerky movements; thinking not clear but maintains posture.	Irrationality, incoherence. Memory lapses, amnesia. Hallucinations. Loss of contact with environment.	Disorientation. Decrease in shivering. Stiffening of muscles. Exhaustion, inability to get up after a rest.
87.8 ⇒ 85.2	Victim becomes irrational, loses contact with environment, drifts into stupor; muscular rigidity continues; pulse and respiration slowed.	Blueness of skin. Decreased heart and respiratory rate. Dilation of pupils. Weak or irregular pulse. Stupor.	Blueness of skin. Slow, irregular, or weak pulse. Drowsiness.
85.2 ⇒ 78.8	Unconsciousness; does not respond to spoken work; most reflexes cease to function; heartbeat becomes erratic.	Unconsciousness.	
78.8 ↓	Failure of cardiac and respiratory control centers in brain; cardiac fibrillation; probable edema and hemorrhage in lungs; apparent death.		



Hypothermia



Frostbite



- Air temps below 32°F
 - skin freezes at 28°F
- Superficial frostbite (mild)
 - freezing of skin surface
- Deep frostbite (severe)
 - freezing of skin and flesh, may include bone
- Hands, fingers, feet, toes, ears, chin, nose, groin area



Frostbite.....



● Symptoms

- initially redness in light skin or grayish in dark skin
- tingling, stinging sensation
- turns numb, yellowish, waxy or gray color
- feels cold, stiff, woody
- blisters may develop



Frostbite



● Treatment

- remove from cold and prevent further heat loss
- remove constricting clothing and jewelry
- rewarm affected area evenly with body heat until pain returns
 - when skin thaws it hurts!!
 - do not rewarm a frostbite injury if it could refreeze during evacuation or if victim must walk for medical treatment
- do not massage affected parts or rub with snow
- evacuate for medical treatment



Frostbite

● Prevention

- wear uniform properly (layers and loosely)
- keep socks and clothing dry (use poly pro/thermax liner socks and foot powder/ change insoles also)
- protect yourself from wind
- drink hot fluids and eat often
- keep active
- "Buddy System"
- warm with body heat
- caution skin contact with super-cooled metals or fuel
- seek medical aid for all suspected cases



Chilblains.....

- Nonfreezing cold injury
- Cold, wet conditions (between 32-60°F, high humidity)
- Repeated, prolonged exposure of bare skin
- Can develop in only a few hours
- Ears, nose, cheeks, fingers, and toes



Chilblains.....



● Symptoms



- initially pale and colorless
- worsens to achy, prickly sensation then numbness
- red, swollen, hot, itchy, tender skin upon rewarming
- blistering in severe cases



Chilblains.....

● Treatment:

- prevent further exposure
- wash, dry gently
- rewarm (apply body heat)
- don't massage or rub
- dry sterile dressing
- seek medical aid



Chilblains.....

● Prevention

- keep dry and warm
- cover exposed skin
- wear appropriate clothing
- use the “Buddy System”
(watch out for each other)



Dehydration.....



- **A** loss of body fluids to the point of slowing or preventing normal body functions
- **I**ncreases chance of becoming a cold weather casualty, esp hypothermia
- **C**an lead to heat cramps or heat exhaustion



Dehydration.....

● Symptoms

- dark urine
- headache
- dizziness, nausea
- weakness
- dry mouth, tongue, throat, lips
- lack of appetite
- stomach cramps or vomiting
- irritability
- decreased amount of urine being produced
- mental sluggishness
- increased or rapid heartbeat
- lethargic
- unconsciousness



Dehydration.....

● Treatment

- drink WATER or other warm liquids
- avoid caffeinated liquids (sodas, coffee, tea)
- do not eat snow
- rest



Dehydration.....



● Prevention

- drink plenty of water
- monitor urine color
- do not wait until you are thirsty
- drink hot liquids for warmth (non-caffeine)

Sunburn.....

- **B**urning of the skin due to overexposure to the sun and UV light
- **C**ontributing factors
 - fair skin, light hair
 - exposed skin
 - *reflective qualities of the snow*
 - high altitudes

● Symptoms

- redness of skin, slight swelling (1st deg)
- prolonged exposure (2nd deg)
 - pain and blistering
 - chills, fever, headache



Sunburn.....

● Treatment

- soothing skin creams in mild cases
- in severe cases, seek medical attention
- aspirin for pain

● Prevention

- cover exposed skin with clothing
- sunscreen, lip balm
- limit exposure of skin to the environment



Carbon Monoxide Poisoning



- **When** oxygen in the body is replaced by carbon monoxide
 - colorless, odorless, tasteless gas resulting from incomplete combustion
- **Inadequate** ventilation from engines, stoves, heaters



Carbon Monoxide Poisoning



● Symptoms

- headache
- dizziness
- weakness
- excessive yawning
- ringing in ears
- confusion
- nausea
- bright red lips, eyelids
- drowsiness
- unconsciousness
- possibly death







Carbon Monoxide Poisoning



● Treatment



- move to fresh air immediately
 - seek medical aid promptly
 - provide mouth-to-mouth resuscitation if victim is not breathing
- 
- 
- 
- 

Carbon Monoxide Poisoning

● Prevention

- ensure proper ventilation
- don't use unvented heaters or engines
- ensure heaters are regularly serviced
- turn heaters off when not needed (during sleep)
- never sleep in vehicle with engine running
- never wrap poncho around vehicle exhaust to collect heat



Snow Blindness.....



- Inflammation and sensitivity of the eyes caused by ultraviolet rays of the sun reflected by the snow or ice



● Symptoms

- gritty feeling in eyes
- redness and tearing
- eye movement will cause pain
- headache



Snow Blindness.....



● Treatment

- remove from sunlight
- blindfold both eyes or cover with cool, wet bandages
- seek medical attention
- recovery may take 2-3 days



● Prevention

- eye protection
 - dark, UV protective glasses
 - field expedient-cut narrow slits in MRE cardboard and tie around head
- do not wait for discomfort to begin



Don't be a victim.....remember!

- **D**ress properly
- **D**rink plenty of fluids
- **E**at right
- **K**eep in shape
- **G**et plenty of rest
- **M**inimize periods of inactivity



Play it safe..... know the signs and follow the rules!

Take the test: <http://www.phpl.uark.edu/ehs/tests/ColdEnvironmentTest.htm>.