Cold Weather

Every year, dozens of Americans die due to exposure to cold

- Add to that number vehicle accidents, fatalities due to the dangerous use of heaters and other winter weather fatalities
Statistics

• There were 29 extreme cold deaths in 2011
  – Down from 34 in 2010
  – The 10-year average is 27
• 21 of those deaths (72%) occurred outdoors
Types of Winter Storms

A major winter storm can last for several days and be accompanied by high winds, freezing rain or sleet, heavy snowfall and cold temperatures.

- **Blizzards**
  - Winds of 35 mph or more with snow and blowing snow reducing visibility to less than ¼ mile for at least 3 hours

- **Blowing snow**
  - Wind-driven snow that reduces visibility
  - Falling snow or snow on the ground picked up by the wind

- **Snow squalls**
  - Brief, intense snow showers accompanied by strong, gusty winds
Types of Winter Storms

• Snow showers
  – Snow falling at varying intensities for brief periods of time

• Snow flurries
  – Light snow falling for short durations

• Ice storms
  – Freezing rain or sleet
Winter Storms Around the United States

- Mid Atlantic and New England States
  - Heavy snow showers, blizzards and ice storms
- Southeastern and Gulf Coast States
  - Ice storms, occasional snow
- Midwest and Plains States
  - Heavy snow showers, blizzards and ice storms
- Rocky Mountain States
  - Heavy snow showers, blizzards
- Alaska
  - Heavy snow showers, blizzards

The aftermath of a winter storm can have an impact on a community or region for days, weeks or even months.
Public Warnings

- Winter storm watch
  - Be alert, a storm is likely
- Winter weather advisory
  - Winter weather conditions are expected to cause significant inconveniences and may be hazardous, especially to motorists
- Frost/freeze warning
  - Below freezing temperatures are expected and may cause damage to plants or crops
Public Warnings

• Winter storm warning
  – Take action, the storm is in or entering the area

• Blizzard warning
  – Snow and strong winds combined will produce blinding snow, near zero visibility, deep drifts and life-threatening wind chill
  – Seek refuge immediately
According to the National Weather Service about 25% of injuries result from being caught out in a winter storm.
Cold Weather Hazards

• When the body is unable to warm itself, serious cold related illnesses and injuries may occur.
• Cold weather threats can lead to loss of fingers and toes or cause permanent kidney, pancreas and liver injury and even death.
Cold Weather Hazards

Some cold weather hazards include

- Ice
- Winter flooding
- Wind chill
- Frostbite
- Hypothermia
- Powerlines
- Downed trees
- Slips, trips and falls
Ice

- Heavy accumulations can bring down trees, utility poles and communication towers
- Can disrupt communications and power for days
- Small accumulations can be extremely dangerous to motorists and pedestrians
- Bridges and overpasses become dangerous because they freeze before other surfaces
Winter Flooding

Winter storms can generate

• Coastal floods
  – Winds generated from winter storms can cause widespread tidal flooding and severe beach erosion along coastal areas

• Ice jams
  – Long cold spells can cause rivers and lakes to freeze
  – A rise in the water level or a thaw breaks the ice into large chunks which become jammed at manmade and natural obstructions
  – Can act as a dam, resulting in severe flooding

• Snow melt
  – Sudden thaw of a heavy snow pack often leads to flooding
Wind Chill

- Not the actual temperature
- Estimated by how temperature and wind speed feel on exposed skin
- Unprotected portions of the body can chill rapidly and should be protected as much as possible
- A 10 mph wind combined with a 30°F temperature can have the same chilling effect on the body as a temperature of 21°F in a calm atmosphere
Frostbite

• Damaging to body tissue
• A wind chill of -20°F will cause frostbite in approximately 30 minutes
• Causes
  – Loss of feeling
  – White or pale appearance in extremities
  – Freezing in deep layers of skin and tissue
• Usually affects
  – Fingers
  – Toes
  – Ear lobes
  – Nose
Frostbite

If symptoms are detected
• Get help
• Move the person to a warm, dry area
• Do not leave the person alone
• Remove wet or tight clothing that may cut off blood flow to the affected area
• Do not rub the affected area
  – Rubbing causes damage to the skin and tissue
Frostbite

If symptoms are detected

• Gently place the affected area in a warm (105°F) water bath
• Monitor water temperature to slowly warm the tissue
• Do not pour warm water directly on the affected area
  – It will warm the tissue too fast causing tissue damage
  – Warming takes about 25-40 minutes
Frostbite

• After the affected area has been warmed, it may become puffy and blister
  – When normal feeling, movement and skin color have returned, the affected area should be dried and wrapped to keep it warm

• If there is a chance the affected area may get cold again, do not warm the skin
  – If the skin is warmed and then becomes cold again, it will cause severe tissue damage
Hypothermia

- Deep body temperature drops less than 95°F
- Can cause
  - Fatigue
  - Drowsiness
  - Uncontrolled shivering
  - Cool, blush skin
  - Slurred speech
  - Clumsy movements
  - Irritableness
  - Irrational or confused behavior
Hypothermia

If symptoms are detected due to land temperatures
• Call for emergency help
• Move the person to a warm, dry area
• Do not leave the person alone
• Remove any wet clothing and replace with warm, dry clothing or wrap the person in blankets
• Have the person drink warm, sweet drinks if they are alert
  – Avoid drinks with caffeine or alcohol
• Have the person move their arms and legs to create muscle heat or place warm bottles or hot packs in the arm pits, groin, neck and head
• Do not rub the person’s body or place them in warm water bath
  – This may stop their heart
Hypothermia

If symptoms are detected due to water temperatures

- Call for emergency help
- Body heat is lost up to 25 times faster in water
- Do not remove any clothing
- Button, buckle, zip and tighten any collars, cuffs, shoes and hoods
  - The layer of trapped water closest to the body provides a layer of insulation that slows the loss of heat
Hypothermia

If symptoms are detected due to water temperatures
• Keep head out of water and put on a hat or hood
• Get out of water as quickly as possible
• Do not attempt to swim unless an object or person can be reached
  – Swimming or other physical activity uses the body’s heat and reduces survival time by about 50%
• If getting out of the water is not possible, wait quietly and conserve body heat
• If another person is in the water, huddle together
Treating Frostbite and Hypothermia

Never give a frostbite or hypothermia victim something with caffeine in it or alcohol

• Caffeine, a stimulant, can cause the heart to beat faster and hasten the effects the cold has on the body
• Alcohol, a depressant, can slow the heart and also hasten the effects of cold body temperatures
Powerline Safety

• Stay clear of downed or damaged powerlines
• Establish a safe distance from lines
• Report incidents to responsible authority
• Only properly-trained electrical utility workers should handle damaged powerlines
• First assess hazards present
• Lines involved should be de-energized
• Utilize proper electrical safety work practices and personal protective equipment
Downed Trees

- Can block public roads and damage powerlines
- Emergency crews are sent out to clear downed trees during a winter storm
- Proper PPE should be worn by workers clearing downed trees
- Use only power equipment built to be used outdoors and in wet conditions
Walking in Cold Weather Conditions

• Walking on snow or ice is dangerous
• Wear well insulated boots with good rubber
• Keep a pair of rubber over-shoes with good treads which fit over your street shoes during the winter months
• Take short steps and walk at a slower pace
• Be on the lookout for vehicles which may have lost traction and are slipping towards you
• Approaching vehicles may not be able to stop at crosswalks or traffic signals
Slips, Trips and Falls

Bodily changes that occur as you age and may affect personal safety

- Balance deteriorates due to the weakening of muscles and change in sensory perception
- Aging dissolves cells in the nervous system, resulting in delayed reflexes

About a million people experience falls every year, according to the Centers for Disease Control and Prevention, and approximately 20,000 people die annually due to fall-related injuries.
Slips, Trips and Falls

8 tips for slippery winter conditions
- Check your footwear
- Keep a shovel and salt in your house
- Check railings
- Bring a cell phone when you leave the house
- Slow down
- Ask for help
- Have a plan
- Strengthen your legs

“Many falls can be successfully avoided or the impact minimized by applying a few basic strategies.”

- Mike Ross
  Physiologist

Quote by Mike Ross, Physiologist
Other Cold Weather Hazards

- Driving accidents due to slippery roadways
- Carbon monoxide poisoning
- Being struck by falling objects
- Roof collapse under weight of snow
- Burns from fires
- Exhaustion from working extended shifts
- Dehydration
- Back injuries or heart attack while removing snow
1. Every year, dozens of Americans die due to exposure to cold.
   A. True
   B. False

2. Cold weather threats can lead to the loss of fingers or toes, permanent kidney, pancreas and liver injury, and death.
   A. True
   B. False

3. Cold weather hazards include all of the following except ________________.
   A. Ice
   B. Frostbite
   C. Heat stroke
   D. Slips, trips and falls

4. Winter storms can generate ________________.
   A. Coastal floods
   B. Ice jams
   C. Snow melt
   D. All of the above

5. Wind chill is the real temperature of the climate.
   A. True
   B. False

6. Frostbite can cause all of the following, except ________________.
   A. Loss of feeling
   B. White or pale appearance in extremities
   C. Warmth
   D. Freezing in deep layers of skin and tissue

7. Hypothermia occurs when a person’s deep body temperature drops below __________.
   A. 99°F
   B. 95°F
   C. 98°F
   D. 100°F

8. Symptoms of hypothermia include ________________.
   A. Fatigue
   B. Uncontrolled shivering
   C. Confused behavior
   D. All of the above

9. You should always give frostbite victims caffeine or alcohol to help increase their body temperature.
   A. True
   B. False

10. Other cold weather hazards include ________________.
    A. Slippery roadways
    B. Roof collapse caused by snow accumulation
    C. Back injuries
    D. All of the above
Cold Weather Safety Answer Key

January 2013 Safety Meeting

Below is the answer key for the quiz.

1. A
2. A
3. C
4. D
5. B
6. C
7. B
8. D
9. B
10. D
**Sign-In Sheet for Safe Operations Meeting**

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Means to Verify Understanding:  
□ Quiz  □ Q & A - Group Discussion  □ Hands On Demo

Safety Topic(s) Covered: **Cold Weather**