These guidelines are generalized for worldwide use. Commanders of units:

- Consume 3 to 6 quarts of liquid (canteens)/day/soldier. Warm,
- Change into dry clothing at least daily and whenever clothing
- Cover exposed skin because it is more likely to develop frostbite. Avoid

**General Guidance for all Cold-Weather Training**

- **Skin:** Cover exposed skin because it is more likely to develop frostbite. Avoid wet skin (common around the nose and mouth). Inspect hands, feet, face and ears frequently for signs of frostbite.
- **Clothing:** Change into dry clothing at least daily and whenever clothing becomes wet. Wash and dry feet and put on dry socks at least twice daily.
- **Nutrition:** Consume 4500 calories/day/soldier. This is equivalent to three meal packets in Meal-Cold Weather (MCW) or three to four MREs.
- **Hydration:** Consume 3 to 6 quarts of liquid (canteens)/day/soldier. Warm, sweet drinks are useful for re-warming.
- **Camouflage:** Consider not using skin camouflage below 32° F because skin camouflage obscures detection of cold injuries.

These guidelines are generalized for worldwide use. Commanders of units with extensive extreme cold-weather training and specialized equipment may opt to use less conservative guidelines. Cold injury prevention is a command responsibility.


*Extended cold weather clothing system (ECWCS). Note: Wet skin could significantly decrease the time for frostbite to occur. Trench Foot can occur at any temperature. Always keep feet warm and dry.
### Cold-Weather Casualties and Injuries Chart

#### Chilblain
**Cause**
- Continuous or repeated exposure of skin to cold/wet weather conditions at temperatures below 50 °F for more than 1-5 hours

**Symptoms**
- Swollen, red skin (or darkening of the skin in dark-skinned soldiers) with rash-like appearance
- Tender, painful skin. Upon rewarming, skin is red, hot, and itchy

**First Aid**
- Warm affected area with direct body heat.
- Do not massage or rub affected areas.
- Do not wet the area or rub it with snow or ice. Do not expose affected area to open fire, stove, or any other intense heat source.

**Prevention**
- Use contact gloves to handle all equipment; never use bare hands.
- Use approved gloves to handle all fuel and POL* products.
- In extreme cold environments, do not remove clothing immediately after heavy exertion (PT); wait until you are in a warmer location.
- Avoid cotton clothing, which holds perspiration, in cold-weather environments.

#### Hypothermia
**Cause**
- Prolonged cold exposure and core body-heat loss. May even occur at temperatures above freezing, especially when a person’s skin or clothing is wet.

**Symptoms**
- Shivering may be present
- Drowsiness, mental slowness, lack of coordination; may progress to unconsciousness, irregular or slow heartbeat, and death.

**First Aid**
- Get the soldier to a medical facility as soon as possible.
- Hypothermia is a medical emergency and may be fatal.
- Never assume someone is dead until determined by a medical authority, even if a victim is cold and not breathing.
- Remove wet clothing, wrap victim in blankets or a sleeping bag, and move indoors.
- Place another person in sleeping bag as an additional heat source.
- Minimize handling of the unconscious victim with a very weak and slow heartbeat so as to not induce a heart attack.

**Prevention**
- Avoid cotton clothing in cold-weather environments.
- Anticipate the need for warming areas for soldiers exposed to cold conditions.

#### Frostbite
**Cause**
- Exposure to below freezing temperatures (< 32°F) causing freezing of skin, fingers, toes, ears and facial parts
- Exposure of skin to metal, super cold fuel and POL*, wind chill, and tight clothing, particularly boots

**Symptoms**
- Numbness in affected area
- Tingling, blistered, swollen, or tender areas
- Pale, yellowish, waxy-looking skin (grayish in dark-skinned soldiers)
- Frozen tissue that feels wooden to the touch

**First Aid**
- Start first-aid immediately. Warm affected area with direct body heat.
- Do not thaw frozen areas if treatment will be delayed.
- Do not massage or rub affected areas.
- Do not wet the area or rub it with snow or ice.
- Do not expose affected area to open fire, stove, or any other intense heat source.
- Evacuate as soon as possible, because frostbite can lead to amputation.

**Prevention**
- Use contact gloves to handle all equipment; never use bare hands.
- Use approved gloves to handle all fuel and POL* products.
- Avoid cotton clothing, which holds perspiration, in cold-weather environments.
- Keep face and ears covered and dry.
- Keep socks clean and dry.
- Avoid tight socks and boots.

**Immersion foot (trench foot)**
**Cause**
- Prolonged (>12 hrs) exposure of tissue especially the feet to wet cold and conditions at 32 °F to 60 °F. Inactivity and damp socks and boots (or tightly laced boots that impair circulation) speed onset and severity.

**Symptoms**
- Swelling, redness, and bleeding with may become pale and blue.
- Cold, numb feet that may progress to hots w/shooting pains.
- Swelling, redness, and bleeding with may become pale and blue.

**First Aid**
- Get medical help immediately.
- Remove wet and constrictive clothing.
- Dry and clean tissues gently. Rewarm feet by exposing them to intense heat source.
- Do not expose affected area to open fire, stove, or any other intense heat source.
- Do not massage, rub, moisten, or expose affected area to extreme heat or lotions. Do not pop blisters.
- Do not allow victim to walk on injury.
- Do not massage or rub affected areas.
- Do not expose affected area to open fire, stove, or any other intense heat source.
- Evacuate as soon as possible, because frostbite can lead to amputation.

**Prevention**
- Use contact gloves to handle all equipment; never use bare hands.
- Use approved gloves to handle all fuel and POL* products.
- Avoid cotton clothing, which holds perspiration, in cold-weather environments.
- Keep face and ears covered and dry.
- Keep socks clean and dry.
- Avoid tight socks and boots.

**Dehydration**
**Cause**
- Continuous or repeated exposure of skin to cold/wet weather conditions at temperatures below 50 °F for more than 1-5 hours

**Symptoms**
- Dehydration
- Headache, confusion, dizziness, excessive yawning
- Eye-pain, redness, watery or gritty feeling in the eyes
- Burning of the cornea of the eye by exposure to intense UV rays of the sun in a snow-covered environment

**First Aid**
- Evacuate if no improvement within 24 hours.
- Never sleep in idling vehicles.
- Use only Army-approved heaters in sleeping areas and ensure that personnel are properly trained to operate the heaters
- Never sleep in idling vehicles.
- Always post a fire guard when operating a heater in sleeping areas.

**Prevention**
- Use contact gloves to handle all equipment; never use bare hands.
- Use approved gloves to handle all fuel and POL* products.
- Avoid cotton clothing, which holds perspiration, in cold-weather environments.
- Keep face and ears covered and dry.
- Keep socks clean and dry.
- Avoid tight socks and boots.

**Carbon Monoxide Poisoning**
**Cause**
- Displacement of oxygen by carbon monoxide in the blood stream from burning fuels without proper exhausting and ventilation

**Symptoms**
- Headache, confusion, dizziness, excessive yawning
- Eye-pain, redness, watery or gritty feeling in the eyes
- Burning of the cornea of the eye by exposure to intense UV rays of the sun in a snow-covered environment

**First Aid**
- Move to fresh air and administer oxygen if available.
- Evacuate.

**Prevention**
- Use only Army-approved heaters in sleeping areas and ensure that personnel are properly trained to operate the heaters.
- Never sleep in idling vehicles.
- Always post a fire guard when operating a heater in sleeping areas.

For additional information refer to U.S. Army Technical Bulletin 508.

*POL—petroleum, oil, lubricants.