See inside for further information

Cold Weather Casualties and Injuries

Cold Weather Casualties and Injuries:

- Chilblain
- Immersion foot (trench foot)
- Frostbite
- Hypothermia
- Dehydration
- Snow Blindness
- Carbon Monoxide Poisoning

- Train soldiers on the proper use of cold weather clothing
- Remember the acronym **C-O-L-D** when wearing clothing in cold weather (**C:** Keep it **Clean**; **O:** avoid **Overdressing**; **L:** wear clothing **Loose** and in layers; **D:** keep clothing **Dry**)
- Maintain adequate hydration and ensure nutritional requirements are met

General Guidance for all Cold-Weather Training

Skin: Exposed skin is more likely to develop frostbite, therefore cover skin. Avoid wet skin (common around the nose and mouth). Inspect hands, feet, face and ears frequently for signs of frostbite.

Clothing: Soldiers must change into dry clothing at least daily and whenever clothing becomes wet, and must wash and dry feet and put on dry socks at least twice daily.

Nutrition: 4500 calories/day/soldier. Equivalent to three meal packets in meal-cold weather (MCW) or three - four MRE'S.

Hydration: 3-6 Liters (canteens)/day/soldier. Warm, sweet drinks are useful for re-warming.

Camouflage: Obscures detection of cold injuries; Consider not using below 32° F; not recommended below 10° F.

Responsibilities: Soldiers are responsible for preventing individual cold injuries. Unit NCO's are responsible for the health and safety of their troops.

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.

See http://chppm-www.apgea.army.mil/coldinjury for electronic of this document and other resources.
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Wind Chill Temperature Table

Wind Speed (mph) ↓	Air Temperature (°F)																		
	40	35	30	25	20	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45
0	40	35	30	25	20	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45
5	36	31	25	19	13	7	1	-5	-11	-16	-22	-28	-34	-40	-46	-52	-57	-63
10	34	27	21	15	9	3	-4	-10	-16	-22	-28	-35	-41	-47	-53	-59	-66	-72
15	32	25	19	13	6	0	-7	-13	-19	-26	-32	-39	-45	-51	-58	-64	-71	-77
20	30	24	17	11	4	-2	-9	-15	-22	-29	-35	-42	-48	-55	-61	-68	-74	-81
25	29	23	16	9	3	-4	-11	-17	-24	-31	-37	-44	-51	-58	-64	-71	-78	-84
30	28	22	15	8	1	-5	-12	-19	-26	-33	-39	-46	-53	-60	-67	-73	-80	-87
35	28	21	14	7	0	-7	-14	-21	-27	-34	-41	-48	-55	-62	-69	-76	-82	-89
40	27	20	13	6	-1	-8	-15	-22	-29	-36	-43	-50	-57	-64	-71	-78	-84	-91
45	26	19	12	5	-2	-9	-16	-23	-30	-37	-44	-51	-58	-65	-72	-79	-86	-93
50	26	19	12	4	-3	-10	-17	-24	-31	-38	-45	-52	-60	-67	-74	-81	-88	-95

RISK OF FROSTBITE (see times on chart below)

- LITTLE DANGER (frostbite occurs in >2 hours in dry, exposed skin)
- INCREASED DANGER (frostbite could occur in 45 minutes or less in dry, exposed skin)
- GREAT DANGER (frostbite could occur in 5 minutes or less in dry, exposed skin)

Follow these Wind Chill Preventive Medicine Measures based on Wind Chill Temperature

30°F and below Alert personnel to the potential for cold injuries
25°F and below Leaders inspect personnel for wear of cold weather clothing. Provide warm-up tents/areas/hot beverages

0°F and below Leaders inspect personnel for cold injuries. Increase the frequency of guard rotations to warming areas. Discourage smoking
-10°F and below Initiate the buddy system. Have personnel check each other for cold injuries
-20°F and below Consider modifying or curtailing all but mission-essential field operations

NOTE: TRENCH FOOT CAN OCCUR AT ANY TEMPERATURE - Always Keep Feet Warm and Dry

Wind Chill Category

(see Wind Chill Temperature Table above)

Work Intensity	Little Danger	Increased Danger	Great Danger
High Digging foxhole, running, marching with rucksack, making or breaking bivouac	Increased surveillance by small unit leaders; Black gloves with liners mandatory below 32ºF (0ºC), mittens with liners mandatory below 10ºF (-12ºC)	ECWCS* or equivalent; Mittens with liners; No facial camouflage; Exposed skin covered and kept dry; Rest in warm, sheltered area; Vapor barrier boots below 0º F (-18º C) Provide warming facilities	Postpone non-essential training; Essential tasks only with <15 minute exposure; Work groups of no less than two; Cover all exposed skin, Provide warming facilities
Low Walking, marching without rucksack, drill and ceremony	Increased surveillance; Cover exposed flesh when possible; Mittens with liner and no facial camouflage below 10ºF (-12ºC); Full head cover below 0ºF (-18ºC). Keep skin dry, especially around nose and mouth	Restrict non-essential training; 30-40 minute work cycles with frequent supervisory surveillance for essential tasks. See above	Cancel outdoor training
Sedentary Sentry duty, eating, resting, sleeping, clerical work	See above; Full head cover and no facial camouflage below 10ºF (-12ºC); Cold-weather boots (VB) below 0ºF (-18ºC); Shorten duty cycles; Provide warming facilities	Postpone non-essential training; 15-20 minute work cycles for essential tasks; Work groups of no less than two personnel; No exposed skin	Cancel outdoor training

* Extended cold weather clothing system

Cold Weather Casualties and Injuries

Chilblain

Cause
- Repeated exposure of bare skin for prolonged periods from 20°- 60°F with high humidity (for those not acclimated to cold weather)

Symptoms
- Swollen, red skin (or darkening of the skin in dark-skinned soldiers)
- Tender, hot skin, usually accompanied by itching

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 to handle equipment
- Use approved gloves to handle all fuel and POL* products
- In the extreme cold environment, do not remove clothing immediately after heavy exertion (PT); wait until you are in a warmer location
- Never wear cotton clothing in the cold weather environment

Hypothermia

Cause
- **Prolonged cold exposure and body-heat loss. May occur at temperatures above freezing, especially when a person is wet**

Symptoms
- Shivering may or may not be present
- Drowsiness, mental slowness, lack of coordination. Can progress to unconsciousness, irregular heartbeat, and death

First-Aid
- This is the most serious cold exposure medical emergency and can lead to death! Get the soldier to a medical facility as soon as possible!
- Even if a victim is cold and is not breathing, never assume someone is dead until determined by medical authorities!
- Strip off wet clothing and wrap victim in blankets or a sleeping bag
- Place another person in sleeping bag as an additional heat source
- For the person with unconsciousness and very low heartbeat, minimize handling of the victim so as to not induce a heart attack

Prevention
- Never wear cotton clothing in the cold weather environment
- Anticipate the need for warming areas for soldiers exposed to cold, wet conditions

frostbite

Cause
- **Freezing of tissue, eg.: Fingers, toes, ears, and other facial parts**
- **Exposure to bare skin on metal, extremely cool fuel and POL*, wind chill, and tight clothing - particularly boots - can make the problem worse**

Symptoms
- Numbness in affected area
- Tingling, blistered, swollen, or tender areas.
- Pale, yellowish, waxy-looking skin (grayish in dark-skinned soldiers)

First-Aid
- Frozen tissue that feels wooden to the touch
- Frostbite can lead to amputation. Evacuate immediately!
- 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

Prevention
- Use contact gloves to handle all equipment; never use bare hands to handle equipment
- Use approved gloves to handle all fuel and POL
- Never wear cotton clothing in the cold weather environment
- Keep face and ears covered and dry
- Keep socks clean and dry
- Avoid tight socks and boots

Immersion foot (trench foot)

Cause
- **Prolonged exposure of feet to wet conditions at 32°-60°F. Inactivity and damp socks and boots (or tightly laced boots that impair circulation) speed onset and severity**

Symptoms
- Cold, numb feet may progress to hot w/shooting pains
- Swelling, redness, and bleeding

First-Aid
- If you suspect trench foot, get medical help immediately
- Rewarm feet by exposing them to warm air
- Do not allow victim to walk on injury
- Evacuate victim to a medical facility
- Do not massage, rub, moisten, or expose affected area to extreme heat

Prevention
- Keep feet clean and dry; change wet or damp socks as soon as possible
- Wet or damp socks should be dried out as soon as possible to allow them to be re-used
- The inside of Vapor Barrier boots should be wiped dry at least once per day, or more often as feet sweat
- Dry leather boots by stuffing with paper towels

Dehydration

Cause
- **Depletion of body fluids**

Symptoms
- Dizziness
- Weakness
- Blurred vision

First-Aid
- Replace lost water. Water should be sipped, not gulped

Prevention
- Get medical treatment
- At a minimum, consume 3-6 quarts of water per day

Snow Blindness

Cause
- **Burning of the cornea of the eye by exposure to intense UV rays of the sun in a snow-covered environment**

Symptoms
- Pain, red, watery or gritty feeling in the eyes

First-Aid
- Rest and total darkness; bandage eyes with gauze
- Evacuate if no improvement within 24 hours

Prevention
- Use sunglasses with side protection in a snow-covered environment
- If sunglasses are not available, use improvised slit glasses

Carbon Monoxide Poisoning

Cause
- **Replacement of oxygen with carbon monoxide in the blood stream caused by burning fuels without proper ventilation**

Symptoms
- Headache, confusion, dizziness, excessive yawning
- Cherry red lips and mouth (in light skinned individuals), grayish tint to lips and mouth (in dark skinned individuals)
- Unconsciousness

First-Aid
- Move to fresh air
- CPR if needed
- Administer oxygen if available Evacuate

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

* POL - petoleum, oil, lubricants