

# ***Eighth Army - Cold Weather Injury Prevention Handbook***

**A practical guide to planning,  
training, and preparing for cold  
weather operations in Korea.**



*VERSION 3 (28 October 2013)*

# Unit Leader's Risk Management Steps for Preventing Cold Casualties

Risk Management (RM) is the Army's Primary decision-making process to identify hazards, reduce risk, and prevent both accidental and tactical loss.

## POSSIBLE OUTCOMES OF INADEQUATE CLIMATIC COLD MANAGEMENT:

- |   |  |
|---|--|
| * <b>Chilblain</b><br>(due to bare skin exposed to cold, humid air) | * <b>Hypothermia</b><br>(whole body temperature dangerously low) |
| * <b>Immersion Foot (Trench Foot)</b><br>(due to wet feet)          | * <b>Dehydration</b>   |
| * <b>Frostbite</b> (freezing of tissue and body parts)              | * <b>Snow Blindness</b>  |
|   | * <b>Carbon Monoxide Poisoning</b>                               |

## The Five Step Risk Assessment Process -

### 1 IDENTIFY HAZARDS

- |  |   |
|--|---|
| * Cold (temperature 40° F and below)                         | * Other Risk Factors include:                             |
| * Wet environment (rain, snow, ice, humidity) or wet clothes | • Previous cold injuries or other significant injuries    |
| * Wind (wind speed 5 mph and higher)                         | • Use of tobacco/nicotine or alcohol within last 24 hours |
| * Lack of adequate shelter/clothing                          | • Skipping meals/poor nutrition                           |
| * Lack of provision or provision of water                    | • Low activity  |
|  | • Fatigue/sleep deprivation                               |
|  | • Little experience/training in cold weather              |
|  | • Cold casualties in the previous 2-3 days                |

### 2 ASSESS HAZARDS TO DETERMINE RISKS

**Follow the Wind Chill Temperature Table to Determine the Danger Level**  
**Do individuals have adequate shelter/clothing?**

- \* Are clothes clean without stains, holes or blemishes (which could decrease heat-retaining function)?
- Have meals been consumed?**
- \* Are meals warm?
- Are there any other circumstances?**
- \* Is there contact with bare metal or fuel/POL (petroleum, oils or lubricants)?
  - \* Is the environment wet? Is there contact with wet materials or wet ground?.
  - \* Can Soldier move around to keep warm?
  - \* Are feet dry and warm
  - \* Is the Soldier with a Buddy who can assist/watch over to prevent cold injuries.

## 2 ASSESS HAZARDS continued

### USING THE WIND CHILL TEMPERATURE TABLE

The wind chill Index (see table below gives the equivalent temperature of the cooling power of wind on exposed flesh.

✧ Any movement of air has the same effect as wind (running, riding in open vehicles, or helicopter downwash.

✧ Any Dry Clothing (Mittens, Scarves, Masks) or material which reduces wind exposure will help protect the covered Skin.

		Wind Chill Temperature Table												
		Wind Speed (MPH)												
		0	5	10	15	20	25	30	35	40	45	50	55	60
Temperature in degrees Fahrenheit	40	40	36	34	32	30	29	28	28	27	26	26	25	25
	35	35	31	27	25	24	23	22	21	20	19	19	18	17
	30	30	25	21	19	17	11	15	14	13	12	12	11	10
	25	25	19	15	13	11	9	8	7	6	5	4	4	3
	20	20	13	9	6	4	3	1	0	-1	-2	-3	-3	-4
	15	15	7	3	0	-2	-4	-5	-7	-8	-9	-10	-11	-11
	10	10	1	-4	-7	-9	-11	-12	-14	-15	-16	-17	-18	-19
	5	5	-5	-10	-13	-15	-17	-19	-21	-22	-23	-24	-25	-26
	0	0	-11	-16	-19	-22	-24	-26	-27	-29	-30	-31	-32	-33
	-5	-5	-16	-22	-26	-29	-31	-33	-34	-36	-37	-38	-39	-40
	-10	-10	-22	-28	-32	-35	-37	-39	-41	-43	-44	-45	-46	-48
	-15	-15	-28	-35	-39	-42	-44	-46	-48	-50	-51	-52	-54	-55
	-20	-20	-34	-41	-45	-48	-51	-53	-55	-57	-58	-60	-61	-62
	-25	-25	-40	-47	-51	-55	-58	-60	-62	-64	-65	-67	-68	-69
	-30	-30	-46	-53	-58	-61	-64	-67	-69	-71	-72	-74	-75	-76
	-35	-35	-52	-59	-64	-68	-71	-73	-76	-78	-79	-81	-82	-84
-40	-40	-57	-66	-71	-74	-78	-80	-82	-84	-86	-88	-89	-91	
-45	-45	-63	-72	-77	-81	-84	-87	-89	-91	-93	-95	-97	-98	

### WET SKIN COULD SIGNIFICANTLY DECREASE THE TIME FOR FROSTBITE TO OCCUR

**Low Risk** – frostbite possible but unlikely (frostbite occurs in > 2 hours in dry, exposed skin)

**High Risk** – frostbite possible could occur in 10 – 30 minutes in dry exposed skin

**Severe Risk** – frostbite possible could occur in 5 – 10 minutes in dry exposed skin

**Extreme Risk** – frostbite possible could occur in 5 minutes or less in dry exposed skin

**NOTE:** To calculate the wind chill index for combinations of temperature and wind other than those given in the table above, you can use the following formula:

$$\text{Wind chill (°F)} = 35.74 + 0.6215T - 35.75(V^{0.16}) + 0.4275T(V^{0.16})$$

Where V = Wind speed in miles per hour and T is the air temperature in degrees Fahrenheit

## 2 ASSESS HAZARDS continued

**REMEMBER!** Cold weather injuries result from prolonged exposure to cold weather. The wind is a big factor in cold weather injuries. Body heat is lost by reducing the thin layer of warm air next to the skin, which causes cold weather injuries. The loss of body heat increases as wind speed increases.

## 3 DEVELOP CONTROLS and MAKE RISK DECISION

### MAIN POINTS TO STRESS TO SOLDIERS

When using Cold Weather Clothing Remember

**C - O - L - D**    Keep It..... **C**lean  
                           Avoid..... **O**verheating  
                           Wear..... **L**oose in layers  
                           Keep It..... **D**ry

### MAIN POINTS TO STRESS TO LEADERS

Follow these **Wind Chill Preventive Measures** base on **Wind Chill Temperature**

<b>Low Risk</b>	<ul style="list-style-type: none"> <li>✧ Increase surveillance with self and buddy checks</li> <li>✧ Wear appropriate Layers and wind protection for the work intensity</li> <li>✧ Cover exposed flesh if possible</li> <li>✧ Wear vapor barrier (VB) boots below 0°F</li> <li>✧ Avoid Sweating</li> </ul>
<b>High Risk</b>	<ul style="list-style-type: none"> <li>✧ Mandatory buddy checks every 20-30 minutes</li> <li>✧ Wear ECWCS or equivalent and wind protection including head hands, feet, and face</li> <li>✧ Cover exposed flesh if possible</li> <li>✧ Wear vapor barrier (VB) boots below 0°F</li> <li>✧ Provide warming facilities</li> <li>✧ Avoid Sweating</li> </ul>
<b>Severe Risk</b>	<ul style="list-style-type: none"> <li>✧ Mandatory buddy checks every 10 minutes</li> <li>✧ Wear ECWCS or equivalent and wind protection including head hands, feet, and face</li> <li>✧ Cover exposed flesh if possible</li> <li>✧ Wear vapor barrier (VB) boots</li> <li>✧ Provide warming facilities</li> <li>✧ Work groups of no less than two personnel</li> <li>✧ No exposed skin</li> <li>✧ Stay Active</li> <li>✧ Avoid Sweating</li> </ul>

### 3 DEVELOP CONTROLS and MAKE RISK DECISION continued

#### Extreme Risk

- ✧ Be ready to modify activities due to extreme risk
- ✧ Wear ECWCS or equivalent and wind protection including head hands, feet, and face
- ✧ Cover exposed flesh if possible
- ✧ Wear vapor barrier (VB) boots
- ✧ Provide warming facilities
- ✧ Keep task duration as short as possible
- ✧ Work groups of no less than two personnel
- ✧ No exposed skin
- ✧ Stay Active
- ✧ Avoid Sweating

#### 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. Soldiers must wash and dry feet and put on dry socks at least twice daily

**Nutrition:** 4500 calories /day/ Soldier. Equivalent to 3 meal packets in meal cold weather or 3-4 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 injures. Unit NCO's are responsible for the well-being of their Soldiers. **Cold injury prevention is a command responsibility and individual Responsibility. ALL COLD WEATHER INJURIES ARE PREVENTABLE!!!.**

#### PERSONAL PROTECTION

Ensure Appropriate Clothes and Proper Wearing of Clothes –

- ✧ Wear clothing loose and in layers
- ✧ Ensure all clothing is clean
- ✧ Ensure proper boots are worn and are dry
- ✧ Ensure clothes do not have holes, broken zippers, etc
- ✧ Ensure hands, fingers, and head are covered and protected
- ✧ Avoid spilling liquids on skin or clothes. Liquid stains will reduce clothing's protective efforts.
- ✧ Change wet, damp clothes ASAP

### **3 DEVELOP CONTROLS and MAKE RISK DECISION** continued

#### **PERSONAL PROTECTION** continued

##### **Keep Body Warm**

- \* Keep moving.
- \* Exercise big muscles (arms, shoulders, trunk, and legs) to keep warm
- \* Avoid alcohol use (alcohol impairs the body's ability to shiver).
- \* Avoid standing on cold, wet ground
- \* Avoid tobacco products which decrease blood flow to skin
- \* Eat all meals to maintain energy.
- \* Drink water or warm non-alcoholic fluids to prevent dehydration.

##### **Protect Feet**

- \* Keep socks clean and dry
- \* Wash feet daily, if possible
- \* Carry extra pairs of socks
- \* Change wet or damp socks ASAP; use foot powder on feet and boots
- \* Avoid tight socks and boots; do not over tighten boot or shoes
- \* Wear overshoes to keep boots dry

##### **Protect Hands**

- \* Wear gloves, mittens, or gloves/mittens with inserts.
- \* Warm hands under clothes if they become numb
- \* Avoid skin contact with snow, fuel or bare metal. Wear proper gloves when handling fuel or bare metal
- \* Change wet or damp socks ASAP; use foot powder on feet and boots
- \* Waterproof gloves by treating with waterproofing compounds

##### **Protect Face and Ears**

- \* Cover face and ears with scarf. Wear insulated cap with flaps over ears or balaclava.
- \* Warm face and ears by covering them with your hands. DO NOT rub face or ears.
- \* Consider not using face camouflage when wind chill is 32°F or below; not recommended below 10°F
- \* Wear sunscreen
- \* Exercise facial muscles

##### **Protect Your Eyes**

- \* Wear sunglasses to prevent snow blindness.
- \* If sunglasses are not available, protective slit goggles can be made from cutting slits in cardboard (e.g., MRE cardboard box).

### 3 DEVELOP CONTROLS and MAKE RISK DECISION continued

#### PERSONAL PROTECTION continued

##### Protect Each Other

- \* Watch for signs of frostbite and other cold weather injuries in your buddy.
- \* Ask about and assist with re-warming of feet, hand, ears, or face.

##### Prevent Carbon Monoxide Poisoning

- \* Use only Army-approved heaters in sleeping areas
- \* Do not sleep near exhaust of a vehicle while the vehicle is running
- \* Do not sleep in enclosed area where an open fire is burning.

#### Leadership Controls

- \* Discontinue/Limit Activities/Exercise During Very Cold Weather

##### Wind Chill Category (See Wind Chill Temperature Table above)

Work Intensity	Low Risk	High Risk	Severe / Extreme Risk
High Digging fox hole, running, marching with rucksack, making or breaking bivouac	Increased surveillance by small unit leaders; Black gloves optional – mandatory below 0°F	ECWCS or equivalent; Mittens with liners; No facial camouflage; exposed skin covered and kept dry; Rest in warm, sheltered area Vapor barrier boots below 0°F. Provide warming facilities	Postpone non-essential training; Essential tasks only with <15 minute exposure; work groups of no less than 2; 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 10°F. Full head cover below 0°F. Keep skin dry especially around the nose and mouth	Restrict non essential training; 30-40 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 10°F Cold weather boots (VB) below 0°F; Shorten duty cycles; Provide warming facilities	Postpone non-essential training; 15-20 minute work cycles for essential tasks. Work groups of no less than 2 personnel. No exposed skin	Cancel Outdoor Training

- \* Use covered vehicles for troop transport
- \* Have warming tents available
- \* Have warm food and drink on hand.
- \* Identify all personnel that have been previous cold injuries

## **4 IMPLEMENT CONTROLS**

- ✧ Identified controls are in place (buddy checks, sock changes, available shelter, and warm meals)
- ✧ Controls are integrated into SOPS
  - Educate Soldiers of hazards and controls (including newly arrive Soldiers)
- ✧ Implement Buddy System to check clothes and personal protection
- ✧ Soldiers will be encouraged and allowed to speak up about any problem (self-checks).
- ✧ A decision to accept risk at the appropriate level

## **5 SUPERVISE AND EVALUATE**

- ✧ Leaders take personal responsibility
- ✧ Set and enforce absolute and not relative standards
- ✧ Hold subordinate leaders accountable and delegating responsibilities (inspections, buddy checks) to ensure control measure have been implemented
- ✧ Monitor implementation of controls
- ✧ Ensure all Soldiers are educated about prevention, recognition, and treatment of cold weather injuries
- ✧ Set and enforce absolute and not relative standards
- ✧ Monitor implementation of controls
- ✧ SPOT CHECK, SPOT CHECK, SPOT CHECK!!! (ears, nose, hands, feet), clothes, personal protection, and hydration.
- ✧ Record, report, and monitor risk:
  - Increase of cold injury casualties
  - Increased complaints/comments about cold
  - Shivering, stomping, jumping-jacks
  - Sign or symptoms of frostbite
- ✧ Evaluate current control measures and strategize new or more efficient ways to keep warm and avoid cold injuries.

# Historical Information

History is filled with examples of the significant impact of cold on military operations. Among U.S. Army and Army Air Force troops, there were over 90,000 cold injuries requiring medical treatment during World War II, and another 10,000 during the Korean War, accounting for 10% of all casualties experienced during these conflicts. During Fiscal year 2011, 22 Army and 23 Air Force Service members were treated for a cold weather injury.

Viewing cold as a challenge to be overcome is the key to the positive attitude required to successfully complete the mission. The winter season brings many operational and safety impacts. Cold temperatures are always present and with extreme cold, present a significant concern for personnel safety and equipment. Flying conditions become more hazardous with many types of weather impacts, not to mention reduced water survival times. Lastly, any rain will freeze on cold surfaces or overnight. The predominant wind in South Korea during winter is north westerly.

## South Korea Weather Averages

	November	December	January	February	March
<b>Average High</b>	52F	39F	34F	38F	48F
<b>Extreme High</b>	73F	59F	60F	61F	68F
<b>Average Low</b>	34F	23F	17F	21F	31F
<b>Extreme Low</b>	09F	-05F	-08F	-04F	-05F
<b>Rain</b>	1.7inch	1.0 inch	0.7 inch	1.1 inch	1.8 inch
<b>Max Rain</b>	4.9 inch	3.8 inch	8.0 inch	4.0 inch	2.0 inch
<b>Max Snow</b>			55 inch	33 inch	12 inch
<b>Snow fall days</b>	2 days	7 days	10 days	6 days	4 days
<b>Cig/Vis &lt;1000/2 # of mornings</b>	7 days	12 days	8 days	7 days	5 days

## A Typical Cold Weather Casualty

- Male
- Approximately 20years Old
- from a warm climate
- is an E4 or below.
- has less than 18 months time in service.
- Uses tobacco, alcohol or medications
- Neglects proper foot care

## Susceptibility Factors

- Previous Cold Weather Injury
- Alcohol, caffeine, nicotine
- Over activity
- Long exposure to the cold
- Acclimatization
- Wind, cold rain
- Discipline and morale
- Inadequate training
- Inadequate nutrition
- Dehydration
- Under activity
- Sick or injured
- Ethnic/geographic origin
- Age
- Physical stamina
- Poor clothing and equipment

## Cold Weather Injuries

### Non Freezing

- Hypothermia
- Chilblains
- Trench/Immersion foot

### Freezing

- Frostbite
- Frost nips

### Associated Injuries

- Snow Blindness
- Dehydration
- Carbon Monoxide Poisoning

## Hypothermia

### Number One Killer

- Loss of 4 or more degrees F body temp.
- Wet body contributes.

### Cause

- Continued Exposure.
- Depleted energy supply.

### Symptoms

- Shivering.
- Slow and Shallow Breathing.
- Slow Speech.
- Loss of Coordination.
- Memory Lapse.
- Hunger, nausea, fatigue.

### Treatment

- End exposure.
- Warm beverages.
- Keep victim in warm, dry clothes.
- Gradually re-warm.

## Field Warming Options

### Passive External

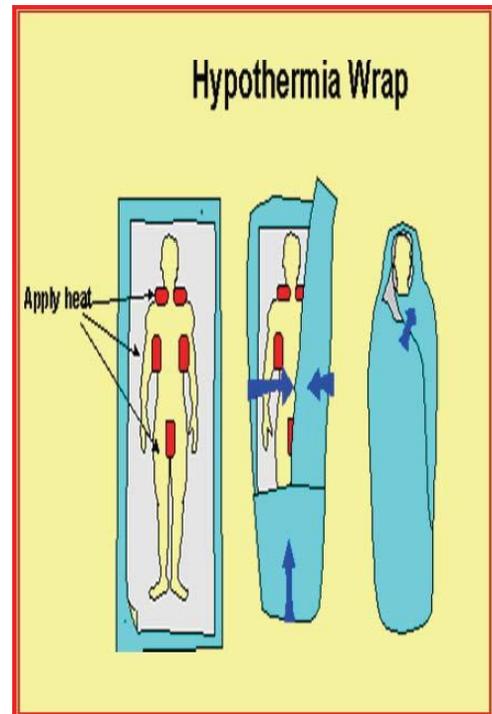
–Cover the victim with dry insulating materials in a warm environment (Blankets, sleeping bags and space blankets).

- Block the wind.
- Keep victim dry.

### Active External

–Apply hot water bottles, heat packs or warmed rocks to areas of high circulation --neck, armpits, and groin.

- Immerse victim in water at least 104°F.
- Share body heat with second person.



## Chilblain

### Cause

- Repeated, chronic exposure of bare skin to temps 32°-60°F.

### Sign/Symptoms

- Appear as swollen, tender, small bumps on skin.
- Complaint of burning or prickly sensation.
- Redness.

### Treatment

- Passive warming at room temp.
- No rubbing.
- Protect from trauma and secondary infection.

## Trench/Immersion Foot

### Cause

- Wet conditions, low temperature.
- Prolonged contact with moisture at temps between 32°-50°F

### Signs / Symptoms

- Numbness and pain.
- Swelling, tingling, itching.
- Pale waxy skin.
- Blistering.

### Treatment

- Elevate, wrap in loose dressing.
- Passive re-warming at room temp.
- No massages or rubbing.
- Air dry, no immersion in water.

## Frostbite

- True freezing injury of tissues.
- Onset signaled by sudden blanching of the skin of nose, ears, cheeks, toes, followed by tingling
- Frostbite has declared itself when these areas are painless
- Intense coldness followed by numbness

### 1st Degree (Frost Nip).

- Partial freezing
- Stinging

Most superficial form of frostbite  
-No permanent CWI

#### **Signs/symptoms**

-Redness, mild swelling, pale, and edema

#### **Treatment**

- Warm immediately

### 2nd Degree

- Clear Blisters
- Numbness and Burning pain

Entire epidermis

- Skin Redness in fair skinned individuals
- Grayish discoloration in darker skinned individuals.
- Clear blister formation at 24-36 hours followed by sheet like skin flaking.
- Persistent cold sensitivity in the affected area.



## Frostbite

### 3rd Degree

- Blue-gray discoloration
- Bleeding blisters

- Loss of sensation with pale, yellow, waxy look if unfrozen.
- Poor capillary refill.
- Tissue loss.
- Hemorrhagic bullae (blood filled blister) form in 3rd degree injuries at 12-35 hours unless re-warming is rapid
- Red discoloring 1-5 days after injury

### 4th Degree

- Blue
- Deeply aching

- 4th degree characterized by gangrene, necrosis, auto-amputation
- Permanent anatomic and functional loss

### Frostbite Treatment

- Rapid re-warming at temperatures slightly above body temperature is the single most effective treatment.
- Re-warm until the skin is pliable.
- NO dry heat --stoves or campfires.
- No re-warming with exercise or rubbing.
- Do not re-warm in the field if there is a risk of refreezing.
- Protection from further injury, pad all affected areas.
- Loosely wrap with gauze and elevate.
- Remove wet and constrictive clothing

## Snow Blindness

### Cause

- Light reflection off snow.

### Signs and Symptoms

- Red, itchy eyes.
- Sensitivity to light.

### Treatment

- Stay indoors.
- Rest eyes.
- Bandage eyes.

### Prevention

- Wear sunglasses.



## 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, grayish tint to lips and mouth (in dark skinned individuals)
- Unconsciousness

### Treatment

- Move to fresh air
- CPR if needed
- Administer oxygen if available. **Evacuate**

### Prevention

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

## Dehydration

### Cause

- Loss of body moisture.
- Dry air.
- Depletion of body fluids.
- Not enough fluid intake.

### Signs/symptoms

- Dry lips and mouth.
- Dark yellow or orange urine.
- Fatigue.

### Treatment/prevention

- Drink frequently.
- 1/2 –1 qt per hour during heavy workload.
- Timed drinking.
- Don't use alcohol or tobacco.

## CW Injury Prevention Tips

### Principles of Care

- Frequent sock changes
- In WW1, the Brits decreased trench foot cases from 29,000 in 1915 to 443 in 1917 by sock changes.
- Cover head and neck, 80% of heat loss.

- Use synthetic fibers, natural fibers retain moisture and have poor wicking ability.

### **Modification of Risk Factors**

- Adequate nutrition: 3000-4000 cal/day.
- Adequate hydration and rest.
- Adequate clothing: loose, layered, windproof and changed often.
- Buddy and supervisor checks.
- Previous cold weather exposure and experience.

## **Shelter**

### **Shelter from weather is critical.**

- The standard shelter is the tent, but improvised shelters (snow caves, snow trenches, lean-tos, etc.) can be constructed from local materials. Use existing buildings when possible.
  - Use a tent liner for better insulation.
  - In tents, soldiers should sleep in long underwear and socks with all other clothing hung up to dry.
  - Ensure adequate ventilation to avoid moisture build up in clothing and sleeping bags.

## **Heaters**

**There are several heaters for use inside tents. The type of heater required depends on the size of the tent or shelter.**

Only U.S. Army-approved heaters (space heater Arctic, NSN 4520-01-444-2375; space heater small, NSN 4520-01-478-9207; space heater medium, NSN 4520-01-329-3451; space heater convective, NSN 4520-01-431-8927) will be used.

**Leaders must ensure that only properly trained soldiers are permitted to set up, light, refuel, and maintain stoves.** Stovepipes must be kept clean and must be tall enough to draft properly. A fireguard must be present at all times. The tent doorway must be kept clear to allow easy escape in case of fire.

**Care must be used to prevent melting the frozen ground beneath or around the stove.**

- By using a tent liner, removing loose snow and ice from the ground before setting up the tent, and preventing the tent from overheating, melting can be minimized.
- If available, plywood tent flooring and metal trays under the stove can be used to reduce melting.

**Ensure that stoves have adequate exhaust from the shelter.**

## **Cold Weather Sleep Tips**

- Prepare an insulation layer between ground and sleeping bag.
- In improvised shelters, only boots and the outermost clothing layer should be removed. Place clothing under the sleeping bag where it can add insulation without accumulation moisture from the body.

- Relieve yourself before you go to sleep.
- Eat a candy bar or part of an MRE before you sleep to give you energy which will help keep you warm.
- Fill canteen and put in your sleeping bag so water won't freeze.
- Under extremely cold conditions, wipe off boots and put in the sleeping bag. This will allow your boots to stay warm.

## Dressing for the COLD

- **Keep Clothing Clean**

Dirt and grease block up the air spaces in your clothing and reduce the insulation value.

- **Avoid Overheating**

Sweat can freeze on outer layers. Stay dry, moisture will decrease the insulating ability of your clothing.

- **Wear Clothing in Layers**

Loose clothing allows air spaces to help trap warm air without restricting blood circulation. Good blood circulation helps to prevent frostbite.

- **Keep Clothing Dry**

You've got to keep your clothing dry, from the outside as well as from the inside.

## Cold Weather Uniform (GEN III ECWCS)

### Layering System

- Level 1: Lightweight Cold Weather Undershirt & Drawers.
- Level 2: Mid-weight Cold Weather Shirt & Drawers
- Level 3: Fleece Jacket.
- Level 4: Wind Jacket
- Level 5: Soft Shell Jacket and Trousers
- Level 6: Extreme Cold Wet Weather Jacket and Trousers
- Level 7: Extreme Cold Weather Parka and Trousers.



### Temperature Zone 1: 55° to 33° F

#### Clothing Layer

Base Layer

#### ECWCS Generation III

- Lightweight cold weather undershirt and drawers and/or
- Mid-weight cold weather shirt/drawers

Insulating Layer

- Green fleece jacket

Outer Shell

- Wind cold weather jacket (Wind Shirt)
- Extreme cold/wet weather jacket (Hard Shell)
- Extreme cold/wet weather trousers (Hard Shell)

Other Items:

- Suspenders
- Balaclava and neck Gaiter
- Contact Gloves
- Green fleece cap

- Issued Wool Socks w/synthetic liner sock
- Temperate Boots; cold weather boots recommended (e.g. Belleville 795, Danner Ft Lewis 400g Tan Military Boots)
- Issued GORE-TEX® gloves with liners

### Training and Education

- Knowledge of cold weather environmental hazards
- **Knowledge of cold weather clothing capabilities and limitations**
- **Skill to use cold weather clothing and equipment to provide protection from the elements**
- Skill to prevent, recognize and treat cold weather injuries

## Temperature Zone 2: 32° to 14° F

### Clothing Layer

Base Layer

### ECWCS Generation III

- Lightweight cold weather undershirt and drawers
- Mid-weight cold weather shirt/drawers

Insulating Layer

- Green fleece jacket

Outer Shell

- Wind cold weather jacket (Wind Shirt)
- Extreme cold/wet weather jacket (Hard Shell)
- Extreme cold/wet weather trousers (Hard Shell)
- Extreme cold weather parka (Puffy Jacket)

Other Items:

- Suspenders
- Balaclava and neck Gaiter
- Contact Gloves
- Green fleece cap

- Issued Wool Socks w/synthetic liner sock
- Temperate Boots; cold weather boots recommended (e.g. Belleville 795, Danner Ft Lewis 400g Tan Military Boots)
- Issued GORE-TEX® gloves with liners
- Ski goggles

## Temperature Zone 3: 14° to -19° F

### Clothing Layer

Base Layer

### ECWCS Generation III

- Lightweight cold weather undershirt and drawers
- Mid-weight cold weather shirt/drawers

Insulating Layer

- Green fleece jacket

Outer Shell

- Wind cold weather jacket (Wind Shirt)
- Extreme cold/wet weather jacket (Soft Shell)
- Extreme cold/wet weather trousers (Soft Shell)
- Extreme cold weather parka (Puffy Jacket)
- Extreme cold weather trousers

Other Items:

- Suspenders
- Balaclava and neck Gaiter
- Contact Gloves
- Green fleece cap
- Black or White Vapor Barrier Boots

- Issued Wool Socks w/synthetic liner sock
- Temperate Boots; cold weather boots recommended (e.g. Belleville 795, Danner Ft Lewis 400g Tan Military Boots)
- Issued GORE-TEX® gloves with liners
- Ski goggles

## 6 Keys to Healthy Feet

- Get into a warm area if possible. Remove your boots and socks. Dry your feet, especially between your toes.
- Use foot powder
- Massage your feet for about five minute increasing circulation.
- Put on a dry pair of socks
- Wipe out the inside of your boots to dry
- Do this every 4 hours

## Protect Your Fingers

- Don't wear gloves or mittens that are too tight.
- Allow blood to circulate freely.
- Failure to do so will cause hands to become cold, numb, or stiff.



# Sustaining Performance

## Positive Leadership and the Right Attitude

- Leaders are responsible for prevention of cold injury.
- Newly assigned individuals, who have little or no cold-weather training and experience, often sustain cold injuries.
  - Service members need to be taught that when it is cold, tasks may be more difficult, but they are not impossible.
  - Leaders can build this confidence in their soldiers by having them practice tasks and survival skills outdoors in the cold, and by conducting cold-weather training exercises.

- Leadership must emphasize by example to demonstrate that cold conditions are beatable.
- Direct supervision should be emphasized.
- Use the buddy system to maintain communication, and to watch for cold injuries.
- Keep Service members busy and physically active. Plan operations carefully to avoid unnecessary periods where personnel are left standing in the open.
  - Use hot food to improve morale.
  - Allow soldiers more time to accomplish tasks and more discretion regarding how to accomplish them.

### **Limit Exposure**

- Many tasks can be divided into shorter segments to allow re-warming breaks: Guard, Maintenance, etc.
  - For tasks requiring work without gloves, brief re-warming periods in a heated shelter or even time spent with the gloves replaced may maintain sufficient manual dexterity that the task can be completed.
    - It may be necessary to complete the task using a two-team approach, where one team works while the other re-warms.
    - Work should be planned to avoid extended periods of inactivity (e.g. information or awaiting transportation) while personnel are outside in the cold.

### **Key Points**

- Shelter from the elements is secondary to defending against enemy actions.
- Eat and drink more food and water than normal.
- Be prepared for sudden weather changes.
- Avoid cold injuries by using a buddy system and frequent self-checks.
- Immediately treat persons showing any sign/symptom of cold injury.
- Sick, injured, and wounded individuals are very susceptible to cold injuries.
- Each Service member should carry an individual cold-weather survival kit at all times.
- Drivers and passengers should always have a sleeping bag and extra cold-weather clothing when traveling by vehicle away from the unit bivouac location.

### **Separated from Your Unit**

#### **Keep calm**

You may only be disoriented. Stop, look and listen for signs of the main unit. Attempt to retrace your path back to your last known position.

#### **Keep together**

Groups must not split up. If scouting parties are required, they should consist of at least two soldiers who go only short distances ahead and mark their trail very clearly.

#### **Keep warm**

Assemble shelters whenever stopping, even if only for a short time. Whenever possible, use wood or other locally available fuel for fires and conserve POL supplies. Burning a single candle inside a tent or vehicle can provide enough heat to keep the occupants warm.

#### **Keep fed and hydrated**

Collect all individual food and water supplies and institute rationing.

### **Keep safe**

If travel on frozen rivers or lakes cannot be avoided, stay near the banks, do not stand close together and watch for spots of unsupported ice resulting from changes in water level.

### **Cold Weather Survival Kit**

- Waterproof matches and fire starter (e.g. Candle, magnesium match, lighter).
- Signaling devices (e.g. Mirror and whistle).
- Knife.
- Pressure bandage, cold-climate lip balm, sunglasses.
- Compass.
- Water container (metal for use in fire).
- Small amount of concentrated food (e.g. MRE or trail mix).
- Foil survival blanket (NSN 7210-00-935-6667).

### **Links to Further Information**

- [TB MED 508, Prevention and Management of Cold Weather Injuries](#)
- [National Weather Service](#)
- [Winter Fire Safety Tips](#)
- [Winter Travel Safety](#)
- [OSHA Protecting Workers in Cold Environment](#)
- [Cold Weather Casualties and Injuries](#)
- [US Army Alaska NWTC Cold Weather Student Handout](#)

**Bottom Line**  
**Leaders that plan, train, and prepare**  
**for the cold....**  
**WILL WIN IN THE COLD!!**



Generation III ECWS



In cold environments, leaders must continually monitor the condition of their Soldiers and be especially alert for signs and symptoms of cold injuries. Prevention, early detection, and immediate evacuation are the leader initiatives through which cold injuries should be managed in the field.

THIS GUIDE WAS ADAPTED FROM THE U.S. ARMY PUBLIC HEALTH COMMAND and TB MED 508.

**OOPS!!**

**Is Anything Missing?** We would like to get your feedback on this handbook. Have you found it helpful? Does it cover what you need? Are there too many specifics? Not enough specifics? What did you hope to find, but didn't? What would improve the handbook? Send your feedback to:

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