
Army Field Support Battalion-Drum
COLD WEATHER SAFETY

Purpose

Establish and implement a cold weather safety program that:

- **preserves human and material resources**
- **sustains combat readiness and mission capabilities**
- **counters known adverse trends for cold weather affects**

Objectives

- **Use strengths and responsibilities of leaders, the safety team, and all others to *preserve* resources and *and counter cold weather risks***
- **Reemphasize Safety as an *instinctive priority* - not an afterthought**
- **Integrate Risk Management (RM) as the *root process* for all operations and tasks**

Preparation For Winter

Facilities:

- Individual Service Member
  - Inspect living and working facilities for holes/cracks in the structure that can be self repaired with duct (100mph) tape.
  - Inspect for job-order submission projects (ie; door jam jarred, windows that won't close, missing/defective door seals, etc.) and report to Camp Mayor
  - Have extra blankets and sleeping bag available in that facilities with the Chico heating unit are limited in heat capacity.
  - In case of heavy snow the Camp Mayor will have a shovel and roof snow rake
  - Maintain free and clear means of egress.
  - Do not hang or install flammable items for partitions (ie; poncho liner, blanket, shower curtain, etc.)

NOTE: Insure fire extinguishers are available and serviceable

DO NOT staple/affix electrical cords to walls or furniture

Preparation For Winter (continued)

Equipment:

- *Unit Level*
  - Prepare all tactical vehicles and generators
  - Conduct winter driver training (see attached presentation)
  - Conduct individual cold weather injury prevention training (see attached presentation)
  - Ensure individuals have the appropriate cold-weather inventory
  - Identify and mark prior cold-weather injured individuals and others susceptible to a cold weather injury
  - Ensure cold weather factors are incorporated into mission/operation composite risk management plans
- *Individuals*
  - Dress in proper layers
  - Report any cold weather exposure symptoms immediately to first-line supervisor

Winter Driving

Winter Driving

Effects Of Weather On Equipment

Cold weather engine starting and warm-up procedures apply…

"DO NOT RACE ENGINE!“

Vehicles with Glow Plugs – Must not start until the “WAIT” light is off!

CLEAN THE VEHICLE COMPLETELY!

- **Clean all lights**
- **Scrape all windows and mirrors**
- **Sweep all the snow off the vehicle**

*** Good all-around visibility is the first requirement for safe winter driving.**

- ***Remove all snow and ice from vehicle and trailer***
- ***Good all around visibility is essential***

Defrosters

- If defrosters are not available, wedge the rear of the hood open so the heat from the motor is vented toward the windshield.

  * Heaters should be checked daily.

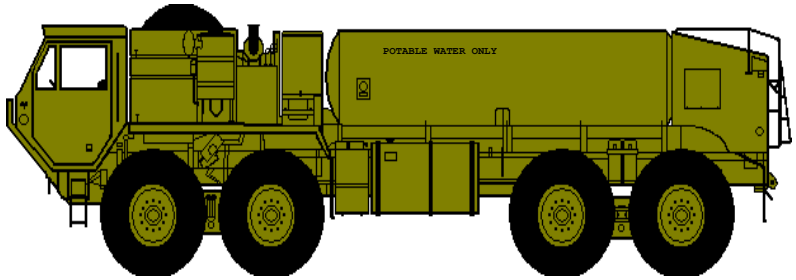
- Cover the windshield when parked (especially at night)

Engine Shutdown

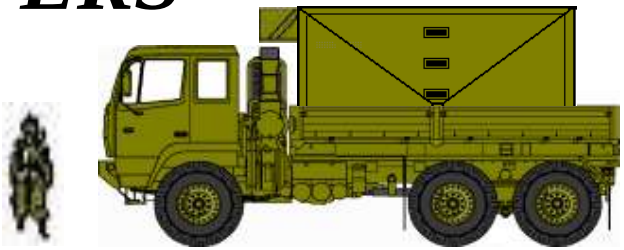
1. Ensure that the vehicle cools down properly before shutting down the engine.
2. Attempt to park the vehicle so that the engine is not facing directly into the wind.
3. Raise the wipers away from the windshield to prevent the wipers from freezing to the windshield.
4. During extreme cold weather, the vehicle should be started every 4 hours to keep the battery charged

CHECK

Use the Appropriate TM!!

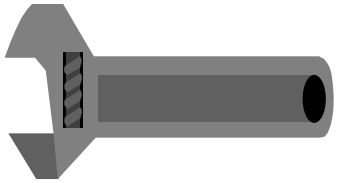


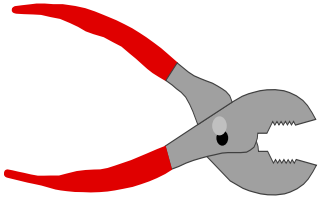
- *LIGHTS*
- *FLUID LEVELS*
- *HEATERS/DEFROSTERS*
- *PERSONAL GEAR*
- *TIRES*
- *COOLING SYSTEM*
- *BATTERIES*
- *EXHAUST SYSTEM*
- *WIPERS*



Daily PMCS is Essential and Required

Maintenance Points





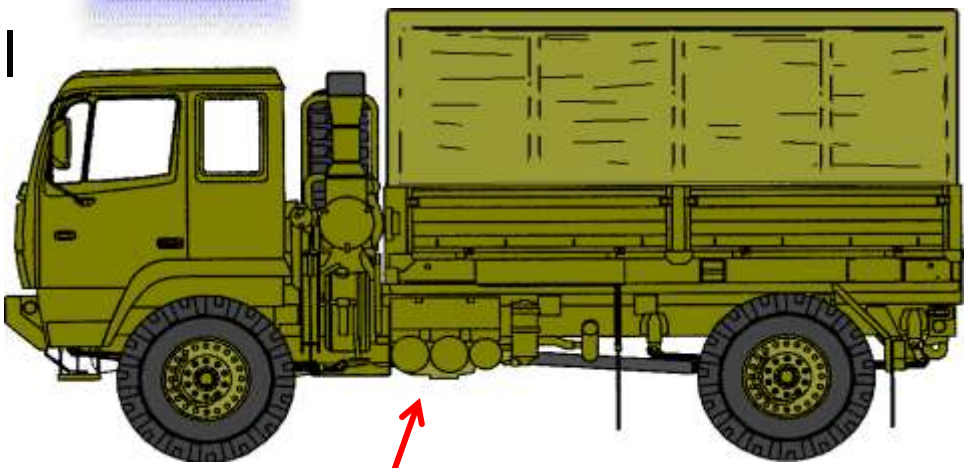
- Proper Maintenance Habits Are Even More Critical In Cold Weather. PMCS will save your life!!
- Antifreeze/Coolant Should Be Checked At Regular Intervals (-60) On All Equipment That Requires Coolant , Or At Least Twice Per Year, (Spring/Fall)

- Ensure Windshield Washer is Washer Type Antifreeze to -20 or More and, If Applicable, Alcohol Bottles Are Replenished.

Maintenance Points

- Keep All Fuel Tanks As Full As Possible To Keep Moisture From Condensing Inside Fuel Lines And Tanks. Filter The Fuel Through A Chamois To Remove Water.

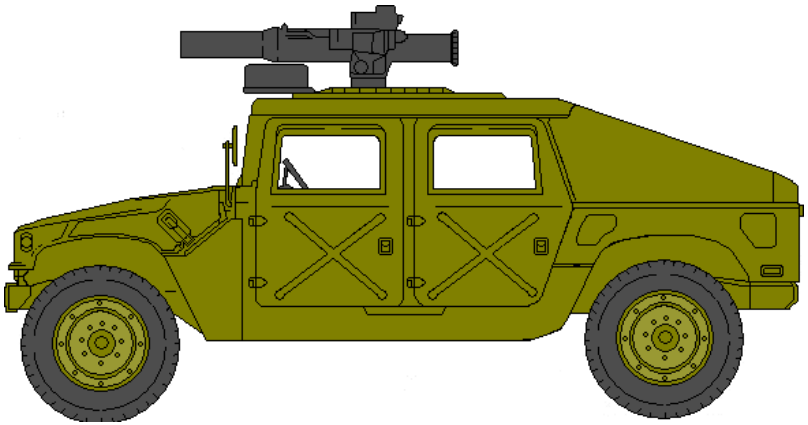
- Drain The Air Tanks Each Time You Stop. This Reduces The Chance Of Moisture In The Air Tanks And Lines.



Drain Daily To Prevent Freezing

Maintenance Points

- **On Brief Halts, During Extremely Cold Weather, Let The Engine Run At A Fast Idle So That The Ammeter Shows A Charge.**

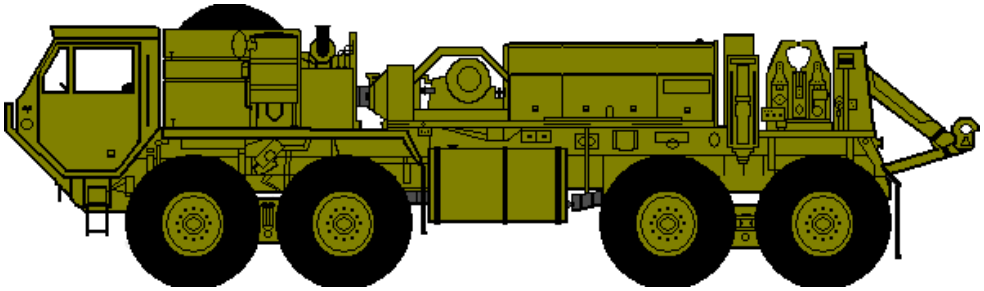


*** Burns Fuel Better**

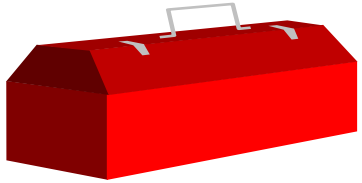
*** Maintains Even Engine Temperature**

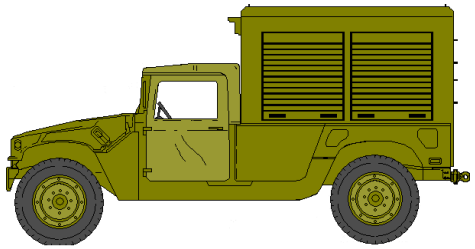
Maintenance Points

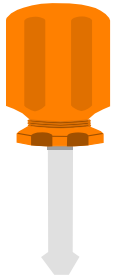
- When Performing PMCS - Do Not Touch Metal With Your Bare Hands.



- When Climbing On Vehicles, Use Extreme Caution - Remember, Three Points Of Contact At All Times.







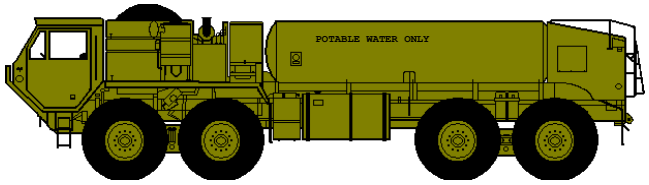
Cold Hard Facts

- ***ADJUST to Conditions***
- ***SLOW on Hills and Grades***
- ***INCREASE Following Distance***
- ***MAINTAIN Steady Steering***
- ***EASY on The Brakes***
- ***DOWN SHIFT to Lower Gear Before Going Down Hills and Grades***

Defensive Driving Techniques

- **Drive At Reduced Speeds So You Can Stop Quicker**
- **Give Turn Signals Sooner Then Usual. This Gives Other Drivers More Time To React**
- **Pump Your Brakes To Warn Of Your Intention To Stop**
- **Maintain At Least Triple The Normal Distance From The Vehicle Ahead.**

Distance



100 Meters

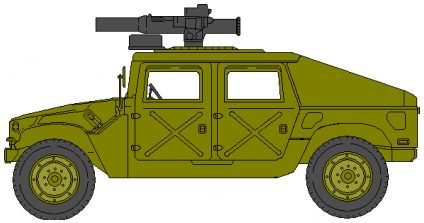
Ideal Road Conditions

500 Meters

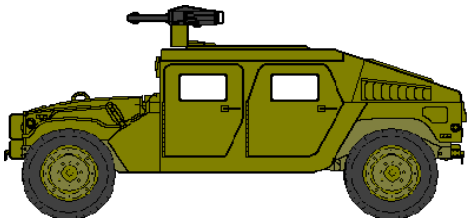
Poor Road Condition

- **Three To Eleven Times More Distance Is Required To Stop A Vehicle On Pavement Covered With Ice Or Snow.**

Timed Distance



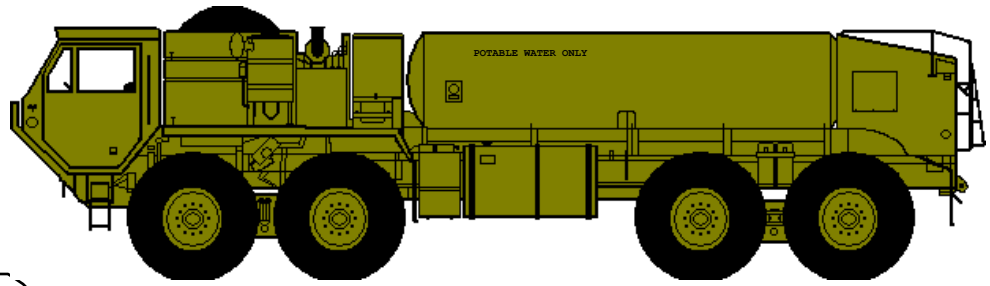
6 SECONDS



10 SECONDS

- **Find a fixed object and count after the vehicle in front passes it.**
- **One Thousand and One – One Thousand and Two and so on.**
- **You should be at a safe distance for the winter conditions.**

Fresh Snow May Conceal An Icy Road Surface.



Operating On Snow And Ice

- Start Driving In Second Or Third Gear Rather Than First Or Low.
- Engage The Clutch Gradually (Or In D2, High With Automatic Transmission)
- Accelerate No More Than Necessary To Keep From Stalling.

*** Avoid Quick Acceleration On Slick Roads - It Will Cause You To Skid.**

What To Watch For

- **Bridges, Overpasses, Underpasses - Due To Cold Air, *These Freeze First***
- **“White Ice” - Compacted Snow, Slightly Melted, Then Refreezes At Night**
- **“Black Ice” - Clear Water That Freezes On Black Pavement**
- **Mountain Sides – Assess The Slop**
- **Curves - Slow Down Before**
- **Intersections - Slippery Areas Due To Cars Starting & Stopping**

Black Ice

Dangerous Because You Can't See It!

Most Common Areas Where You Find It:

- Bridges and Overpasses
- Shaded areas

Black Ice

REACTION

- **Do Not Panic!**
- **Make No Sudden Changes In Speed Or Direction!**
- **Ease Off Accelerator!**
- **Steer In Direction That The Rear Of The Vehicle Is Skidding!**

When Driving In Fog, Use Low-beam Headlights

Stop, Off The Roadway, And Wait

Hills And Grades

When approaching a hill or upgrade / downgrade remember to do the following:

- Select the proper gear before approaching, usually a lower gear.
- Use the same gear going down that you used going up. This will allow the engine to act as a brake, so you will not have to use your brake excessively.

(On steep or very slippery grades, use at least one gear lower, and go slower)

Skids

Result From Unexpected Forces:

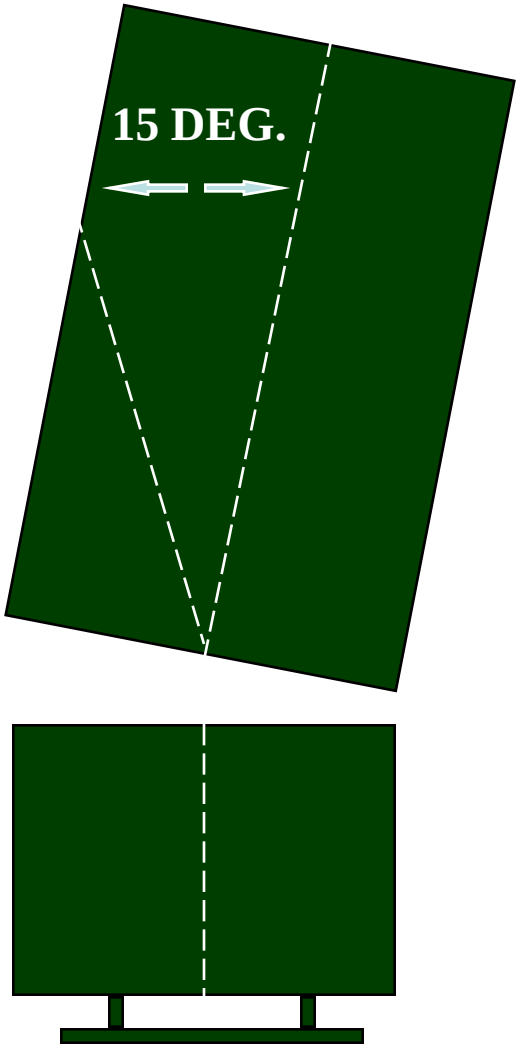
1. Black Ice
2. Driving too fast for conditions
3. Sudden steering corrections or braking
4. Sudden acceleration

Skids Continued

If your vehicle begins to skids, take the following actions:

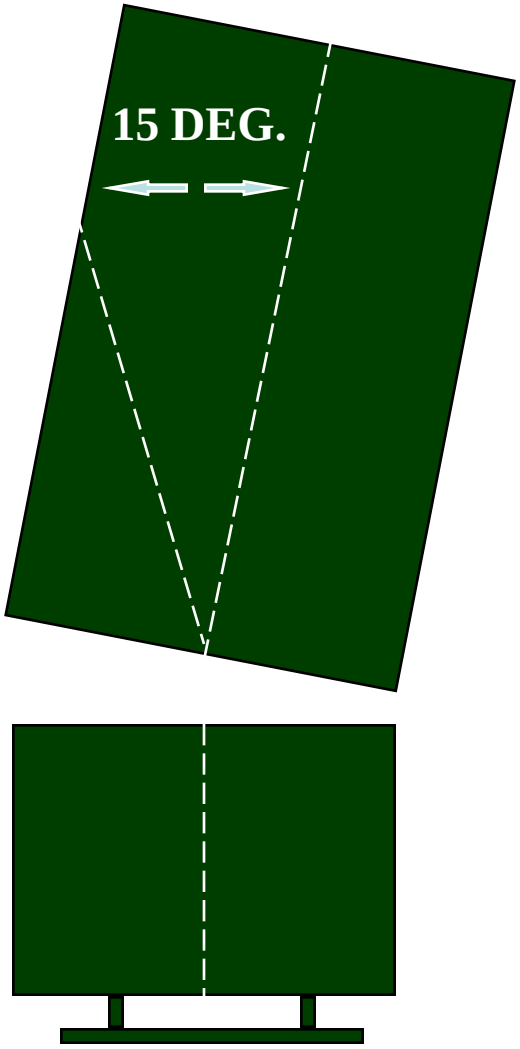
- **Front end skids -** Release the brake and let the front wheels roll freely to regain traction and steering control.

- **Rear end skids** – For non-ABS systems, Take foot off of accelerator and turn wheels in the direction that the rear of the vehicle is skidding, and pump brakes lightly.



Vehicle Jack-knife Prevention

Brake before the turn, not in the turn accelerate smoothly and slowly. Decelerate slowly, and ease up on the brakes. Make smooth gear shifts and clutch engagements. Steer in the opposite direction the trailer is skidding, while pumping the brakes lightly.

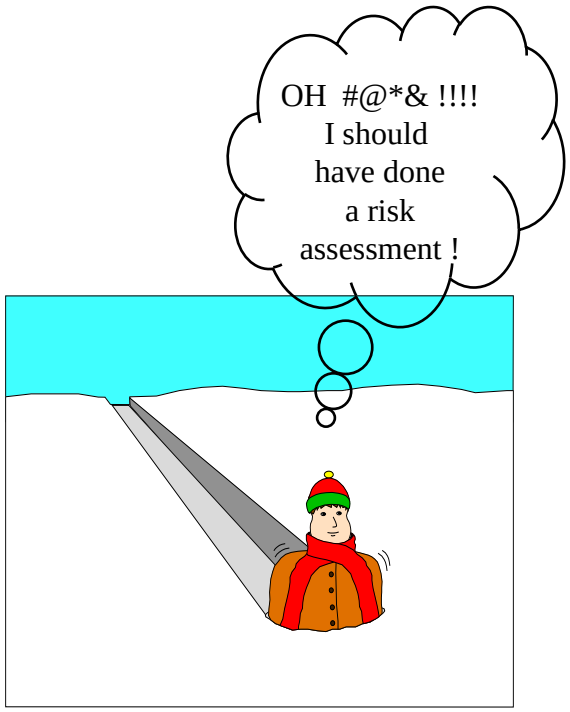


Vehicle Jack-knife

A Jack-knife Occurs When The Angle Between The Tractor And Trailer Gets To A Point Where It Can't Be Straightened Out By The Driver.

Composite Risk Management

- EXPERIENCE
  - LIVING ENVIRONMENT (Driving in snow/on ice)
  - YEARS AND MILES DRIVEN
  - DRIVERS SELECTION FOR MISSION
  - SITUATIONS
  - VEHICLE CONDITION
- ROAD CONDITIONS
  - RED
  - AMBER
  - GREEN



Carbon Monoxide

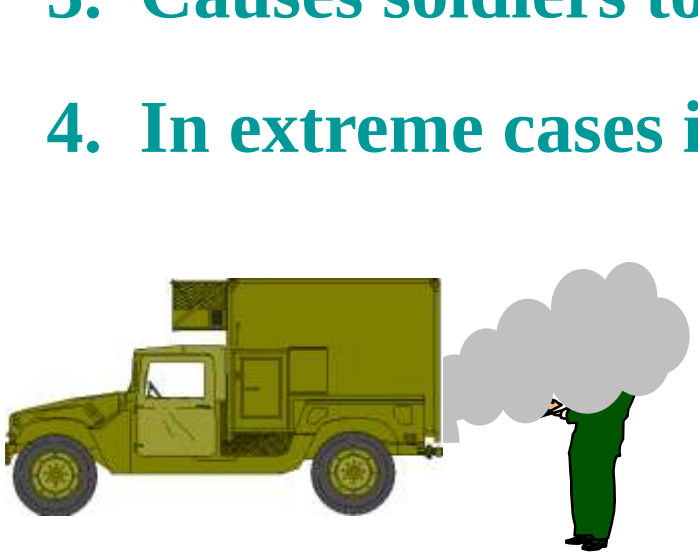
In spite of public service announcements, each year too many people die as a result of carbon monoxide poisoning. Many are exposed to levels so dangerous that medical attention is required.

DANGER

Carbon Monoxide Poisoning

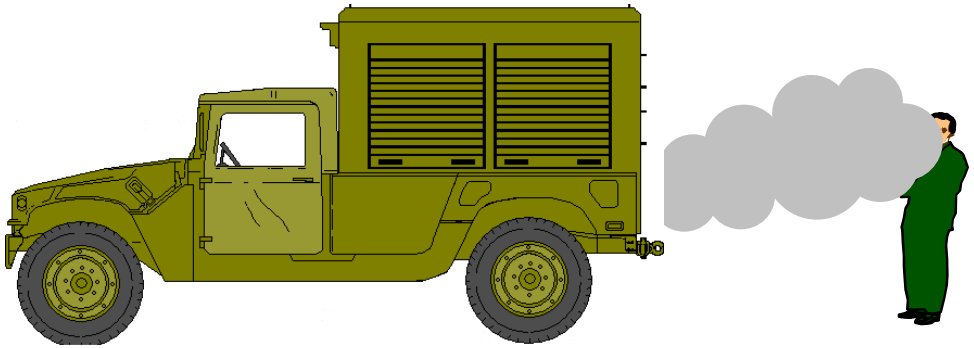
Carbon Monoxide

1. Odorless & Colorless
2. Nausea & Dizziness
3. Causes soldiers to become sleepy
4. In extreme cases it can be fatal



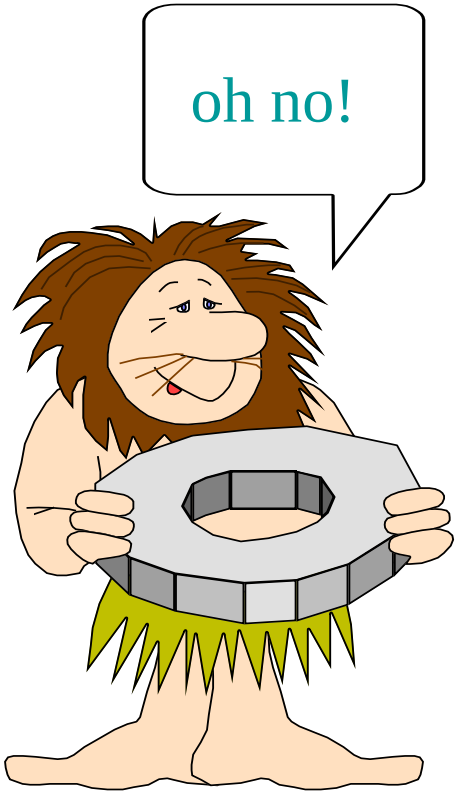
Carbon Monoxide Prevention

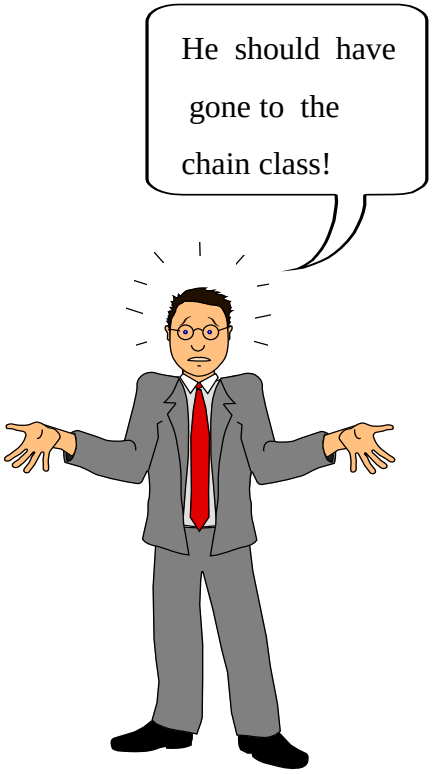
1. Never Run Engine With Windows Up
2. Checks Exhaust Daily For Leaks (Part Of PMCS)
3. Always Leave At Least One Window Cracked While Driving



CHAINS

Chains Give A Good Bite In Snow Or Mud But Tend To Slide And Slip On Ice And Packed Snow.

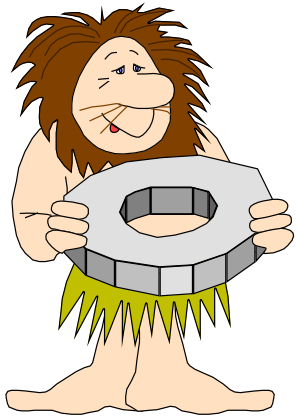




CHAINS

Before Execution Of The Mission, The Following Checks Should Be Made:

1. **Ensure Vehicle Is Equipped With Snow Chains.**
2. **Snow Chains Are Serviceable, And In Good Condition.**
3. **Leadership Will Ensure The Driver Has A Working Knowledge Of How To Properly Apply Snow Chains**
4. **Include In Convoy Brief**



Key Driving Tips

- **Composite Risk Management**
- **Allow More Time To Travel**
- **Maintain More Space**
- **Drive With Your Lights On**
- **Wear Safety Belts**
- **Look Well Ahead**
- **Anticipate Problems**
- **Have The Proper Snow And Personal Equipment**

Wear Quality Sunglasses

Good quality sunglasses help highlight changes in the terrain and road surface, even in low visibility conditions

Tip: When in a white out, wear sun glasses!

Summary

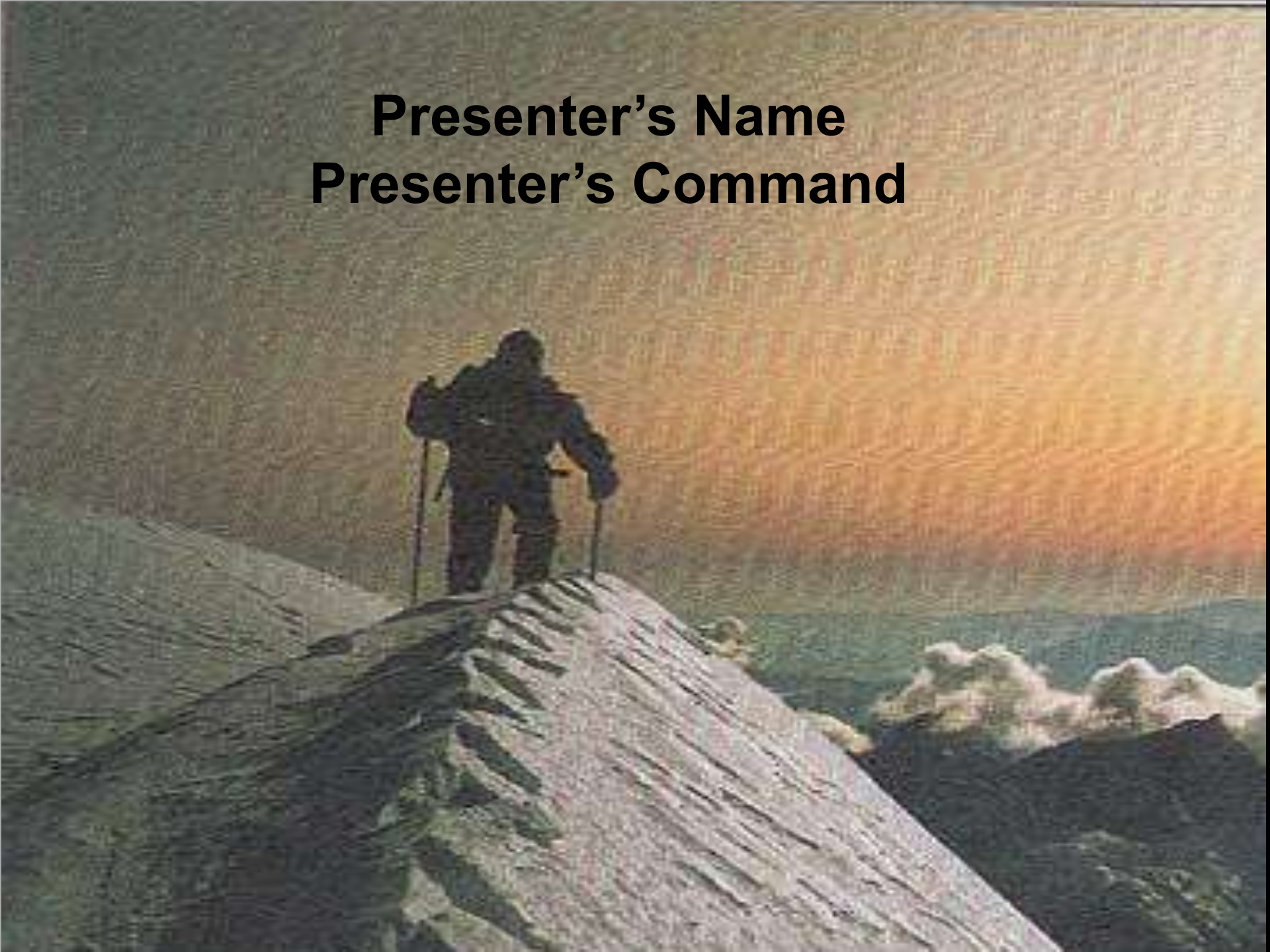
- **Drivers Must Continually Train And Gain Experience For Safe Winter Driving**
- **Cold Weather Greatly Affects The Operating Performance Of Your Equipment**
- **Winter Weather Presents Unique Hazards, I.E.. Snow, Slush, Ice, Black Ice, Etc...**
- **Slow Down!**
- **Increase Intervals!**
- **Wear Seat Belts**
- **Adjust To Conditions**

Safety is an *instinctive priority*
not an after thought!!

Questions

Be Safe!

“One Team One Fight”


Presenter’s Name
Presenter’s Command

Material Needed for this Presentation

- Unit Leader's and Instructor's Composite Risk Management Steps for Preventing Cold Casualties – 8 Pages

  Download from:
  http://chppm-www.apgea.army.mil/coldinjury

Risk Management is the Army's principle risk-reduction process to protect the force 27/07. Our goal is to make composite risk management a routine part of planning and executing operational missions.

Possible Outcomes of inadequate climatic cold management:

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

Risk Management is the Process of Identifying and Controlling Hazards to Protect the Force

Composite Risk Management Steps

1. Identify Hazards
2. Assess Hazards
3. Develop and Control Hazards
4. Implement Controls
5. Supervise and Evaluate

Also See Army Field Manual:
FM 5-19 August 2006

1 Identify Hazards

- Cold (temperature 40º F and below)
- Wet (rain, snow, ice, humidity) or wet clothes
- Wind (wind speed 5 mph and higher)
- Lack of adequate shelter/clothes
- Lack of provisions/Water

- Other Risk Factors include:
  - Previous cold injuries or other significant injuries
  - Use of tobacco/nicotine or alcohol
  - Skipping meals/poor nutrition
  - Low activity
  - Fatigue/sleep deprivation
  - Little experience/training in cold weather
  - Cold casualties in the previous 2-3 days

If any of the above conditions exist, the risk of a cold weather injury may be increased; follow the Risk Management steps.

2 Assess Hazards

Follow Wind Chill Chart to Determine the Danger Level (see following pages for the chart)

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 other circumstances?

- Is there contact with bare metal or fuel/POL (petroleum, oils or lubricants)?
- Is the environment wet? Contact with wet materials or wet ground?
- Can solider move around to keep warm?
- Are feet dry and warm?
- Is the soldier with a buddy who can assist/watch over to prevent cold injures?

2 Assess Hazards (continued)

Using Wind chill Chart

The wind chill index 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.

Trench foot injuries can occur at any point on the wind chill chart and -

- Are much more likely to occur than frostbite at “LITTLE DANGER” wind chill temperatures, especially on extended exercises/missions and/or in wet environments.
- Can lead to permanent disability, just like frostbite.

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

GREEN LITTLE DANGER (frostbite occurs in >2 hours in dry, exposed skin)

YELLOW INCREASED DANGER (frostbite could occur in 45 minutes or less in dry exposed skin)

RED GREAT DANGER (frostbite could occur in 5 minutes or less in dry, exposed skin)

Wind chill Category: Follow Wind Chill Chart to determine Danger Level

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 optional - mandatory below 0°F (-18°C);	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 (-18°C) 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 (-12°C); Full head cover below 0°F (-18°C). 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 10°F (-12°C); Cold-weather boots (VB) below 0°F (-18°C); 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

*ECWCS – Extended Cold Weather Clothing System

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.

3 Control Hazards

Main Points to Stress to Soldiers:

When using Cold-Weather Clothing, Remember

C-O-L-D

Keep it……..	**C**lean
Avoid…….	**O**verheating
Wear it…….	**L**oose in layers
Keep it ……..	**D**ry

General Guidance for all Cold-Weather Training

3 Control Hazards continued

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 (MCW) 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 32º 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. **Cold injury prevention is a command responsibility.**

3 Control Hazards continued

Main Points to Stress to Leaders:

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**

3 Control Hazards continued

Personal Protection

Ensure appropriate clothes and proper wearing of clothes –

- Loose and in layers
- Clean
- Ensure proper boots are worn and are dry
- Clothes do not have holes/broken zippers etc.
- 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

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 and/or warm nonalcoholic fluids to prevent dehydration

3 Control Hazards continued

Protect Feet

- Keep socks clean and dry
- Wash feet daily if possible
- Carry extra pairs of socks
- Change wet or damps 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 or mittens or 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.
- Waterproof gloves by treating with waterproofing compounds

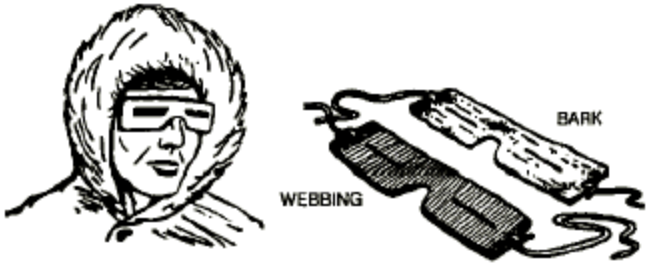
3 Control Hazards continued

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 32º F or below; not recommended below 10º 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 (eg. MRE cardboard box).



3 Control Hazards 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 vehicle is running
- Do not sleep in enclosed area where an open fire is burning

3 Control Hazards continued

Leadership Controls

- Discontinue/limit activities/exercise during very cold weather (see chart page 2)
- Use covered vehicles for troop transport
- Have warming tents available
- Have warm food and drink on hand

3 Control Hazards continued

Facility Controls

- Use only Army authorized heaters. (i.e. no electric, kerosene or propane heaters)
- Ensure heaters are in working order and adequately ventilated
- Ensure integrity of shelters for maximum protection from the cold

4 Implement Controls

- Identified controls are in place
- Controls are integrated into SOPs
  - Educate soldiers of hazards and controls (including newly arrived soldiers)
  - Implement buddy system to check clothes/personal protection
- Decision to accept risk is made at appropriate level
- Buddy System to check each other
- Self Checks

5 Supervise and Evaluate

- Ensure all soldiers are educated about prevention, recognition and treatment of cold weather injuries
- Delegate responsibilities to ensure control measures have been implemented
- Monitor adequacy/progress of implementation of control measures
- Do frequent spot checks of clothes, personal protection and hydration
- Record and monitor indicators of increasing cold risks, for example:
  - Increasing number of cold weather injuries
  - Increased complaints/comments about cold
  - Observations of shivering, signs of cold weather injuries
- Evaluate current control measures and strategize new or more efficient ways to keep warm and avoid cold injuries

Cold Weather Casualties and Injuries:

- **Chilblain**
  (due to bare skin exposed to cold, humid air)
- **Immersion Foot (Trench Foot)**
  (due to wet feet)
- **Frostbite (**freezing of tissue and body parts)
- **Hypothermia**
  (whole body temperature dangerously low)
- **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

Chilblain

Cause	Symptoms	First-Aid	Prevention
■ Repeated exposure of bare skin for prolonged periods from 20°-60°F with high humidity (for those not acclimated to cold weather).	■ Swollen, red skin (or darkening of the skin in dark-skinned soldiers). ■ Tender, hot skin, usually accompanied by itching.	■ 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.	■ Use contact gloves to handle all equipment; never use bare hands to handle equipment, esp. metal. ■ Use approved gloves to handle all fuel and POL* products. ■ In the extreme cold environment, do not remove clothing immediately after heavy exertion (PT); until you are in a warmer location. ■ Never wear cotton clothing in the cold weather environment.

Immersion foot (trench foot)

Cause

■ Prolonged exposure of feet to wet conditions 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 with shooting pains.
■ Swelling, redness, and bleeding.

First-Aid

■ If you suspect trench foot, get medical help **immediately!**
■ Re-warm 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 of damp socks should be dried as soon as possible to allow them to be re-used.
■ The inside of Vapor Barrier boots should be wiped dry once per day, or more often as feet sweat.
■ Dry leather boots by stuffing with paper towels.

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).
- Frozen tissue that feels wooden to the touch.

First-Aid

- **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.

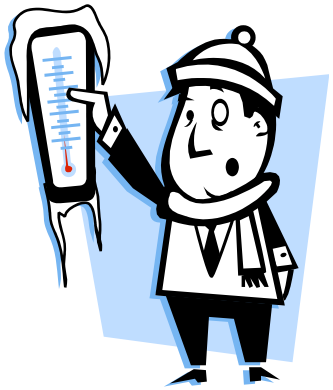
Prevention

- Use contact gloves to handle all equipment; never use bare hands to handle equipment.
- Use approved gloves to handle 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.

Hypothermia

Cause

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



Symptoms

■ Shivering may or may not be present.
■ Drowsiness, mental slowness or 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.

Dehydration

Cause	Symptoms	First-Aid	Prevention
■ Depletion of body fluids.	■ Dizziness. ■ Weakness. ■ Blurred vision.	■ Replace lost water. Water should be sipped, not gulped. ■ Get medical treatment.	■ At a minimum drink 3-6 quarts of fluid per day.

Snow Blindness

Cause	Symptoms	First-Aid	Prevention
■ Burning of the cornea of the eye by exposure to intense UV rays of the sun in a snow-covered environment	■ Pain, red, watery or gritty feeling in the eyes	■ Rest and total darkness; bandage eyes with gauze ■ Evacuate if no improvement within 24 hours	■ Use sunglasses with side protection in a snow-covered environment. ■ If sunglasses are not available use improvised slit glasses.

Carbon Monoxide Poisoning

Cause	Symptoms	First-Aid	Prevention
■ Replacement of oxygen with carbon monoxide in the blood stream caused by burning fuels without proper ventilation	■ Headache, confusion, dizziness, excessive yawning ■ Cherry red lips and mouth, grayish tint to lips and mouth (in dark skinned individuals) ■Unconsciousness	■ Move to fresh air ■ CPR if needed ■ Administer oxygen if available. Evacuate	■ 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.

Extended Cold Weather Clothing System (ECWCS) GEN III

- Based on layering systems currently utilized by mountaineering professionals
- GEN III ECWCS features seven new levels of insulation to provide a broad level of environmental protection that extends from -40°F to + 60°F. Each piece fits and functions either alone, or when used in the system, to provide the most options and highest possible performance for the warfighter

GEN III ECWCS:

Level I

- Light-Weight Cold Weather Undershirt and Drawers
- Worn directly next to the skin – no underwear
- Highly breathable, fast drying fabric

Level II

- Mid-Weight Cold Weather Undershirt and Drawers
- Worn directly next to the skin or in conjunction with other levels
- For use in mild climates

GEN III ECWCS:

Level III

• Primary insulation layer for use in moderate to cold climates

• Worn underneath shell layers or worn as an outer garment in cool conditions.

Level IV

• Worn with base and insulative levels for use in moderate to cold conditions.

• serves as an outer shell in moderate to cold environments

GEN III ECWCS:

Level V

• Outer shell in moderate to cold environments

• For use in cold weather conditions as a soft shell layer combined with other base and insulative layers

Level VI

• Worn over other levels in cold wet conditions alternating between freezing and thawing

• For use in cold, wet conditions as a hard shell layer combined with other base and insulative layers

GEN III ECWCS:

Level VII

• Outermost level of protection in the System designed for use during static operations in extreme cold, dry conditions

• Provides protection and warmth from the elements in cold conditions during static operations maintaining warmth even when wet

Clothing/Equipment Problems

- Malfunctions occur more often during cold-weather
- Moisture from sweat or breathing can become trapped in clothing or sleeping bags
  - minimize overdressing
  - remove clothing layers upon entering heated areas or during strenuous physical activity
  - dry clothing by hanging in the tent

Clothing/Equipment Problems

- Restricted visibility: cold eyeglasses, goggles, and eyepiece sights fog over easily when warm, moist breath passes over them or when coming in from cold to warm areas
- Depth perception is reduced at 0^{o}F and below. Visual acuity is reduced at -20^{o}F and below or wind speed is over 20 mph.
  - compensate by increasing vigilance and slowing down
  - use antifogging compounds on eyeglasses and goggles

Clothing/Equipment Problems

- Loss of manual dexterity from wearing gloves and mittens
  - Lightweight polypro glove liners can be worn
  - Do not blow warm breath into gloves
- Metal can be dangerous to touch (contact frostbite)
- Moisture will condense on cold metal exposed to heat
  - if weapons are brought inside, they should be covered and placed near the floor to minimize condensation
  - clean and dry the weapon after it warms and before returning to cold.

Water Consumption

- 5-6 quarts of water/day
- Avoid nicotine and alcohol
- Hot juice or soup
- Protect water from freezing
- In emergency, melt snow and purify before drinking
- Dark, yellow urine is first sign of dehydration

Water Consumption

- Plastic canteen, when filled with water, will freeze quickly
  - carry canteen in interior uniform pocket or wrapped in clothing and placed in pack
- Do not fill canteen over 2/3 full to allow for expansion should ice form
- Insulated canteen, 1 quart

Food Consumption

- Caloric intake increases 25-50%
- Calories needed
  - moderate exertion - 4500 calories/day
  - extreme exertion - 8000 calories/day
- 4 standard MREs per day
  - 3 MREs = 3600 calories
- Plan for hot chow, warm beverages or heat MRE

Food Consumption

- Frequently snack throughout the day
- Carry emergency rations
- Eat large snack at night to keep warmer during sleep and prevent shivering

Personal Hygiene

- Change socks 2-3 times daily
- Brush teeth daily
- Change underwear at least twice weekly
- Keep clothes clean
- Wash hands, feet, face, groin daily (canteen baths or handy wipes)
- Shave at evening if possible

Individual Cold Weather Survival Kit

- Waterproof matches and fire starters (candles)
- Signaling devices (mirror, whistle)
- Knife
- Pressure bandage, lip balm, sunglasses
- Water container (metal for use in fire)
- Compass
- Emergency rations (MREs, trail mix)
- Foil survival blanket
- 5 m of strong nylon cord
- Small flashlight

Work Practices

- Proper cold weather training for acclimatization
- Practice performing duties while wearing cold weather clothing
- Ensure cold weather clothing is in proper working condition
- Feet, hands, exposed skin must be kept dry
- Maintain proper hydration, nutrition
- Minimize periods of inactivity

Work Practices

- Command emphasis on education and training
- Appropriate use of weather data, especially the wind-chill factor (see next slide)
- Liberal use of sick call
- Provide time and locations for thorough warming and clothing changes
- Use Field Sanitation Teams and buddy checks to prevent cold injuries

Cold Weather Injury Products Available (in 2006) from the US Army Center for Health Promotion and Preventive Medicine (CHPPM)

http://chppm-www.apgea.army.mil/

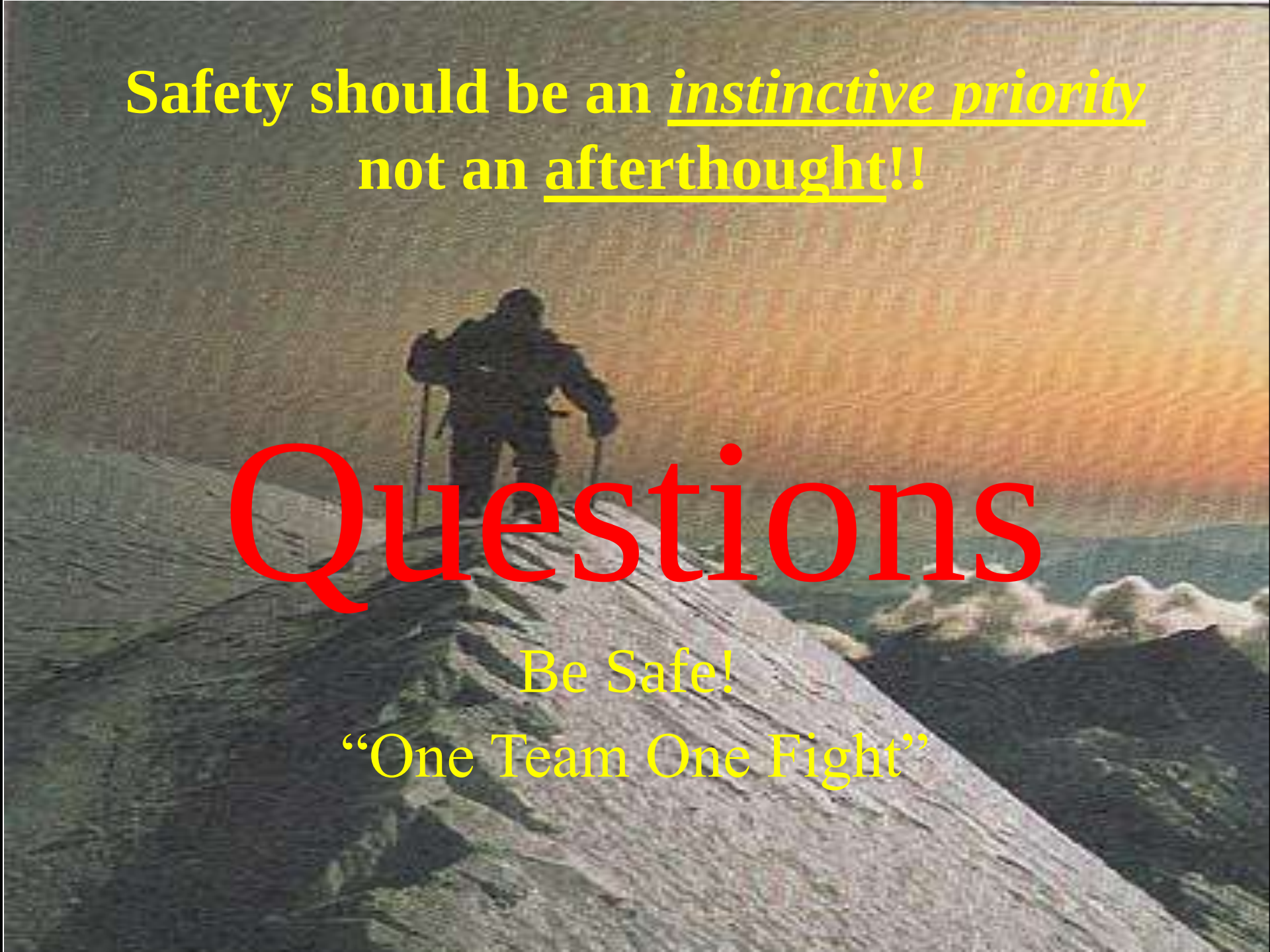
Then click on **Safety and Environmental Health**
Cold Weather Injury prevention.

Soldier Awareness Poster

Cold Weather Injuries Chart

Risk Management Guide

Cold Weather Injuries Card


Safety should be an instinctive priority
not an afterthought!!
Questions
Be Safe!
“One Team One Fight”