

COLD WEATHER ISSUES

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WET COLD > 14 F average 24h Freeze at night then thaw during day--ground slushy--wet snow/rain

DRY COLD < 14 F average 24h Ground frozen--dry snow--no thaw

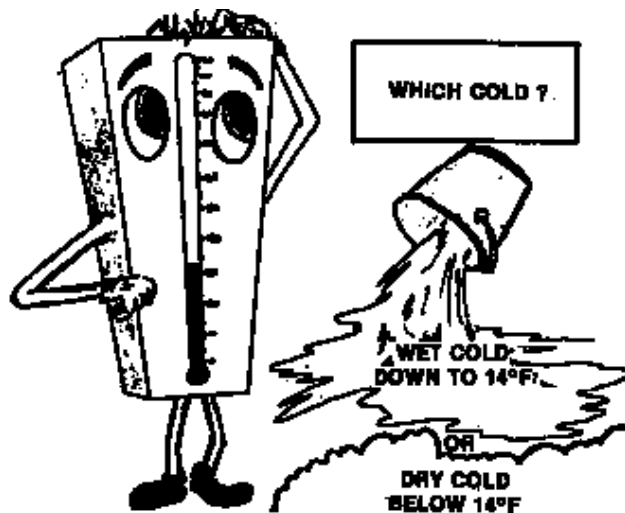
Summary of conditions:

Wet Cold.

Wet-cold conditions occur where variations in day and night temperatures cause alternate freezing and thawing. These conditions are often accompanied by wet snow and rain causing the ground to become slushy and muddy. Wet cold requires clothing with a waterproof or water-repellent, wind-resistant outer layer, and an insulated inner layer sufficient for moderately cold weather of 14°F and above. Waterproof footwear is essential.

Dry Cold.

Dry-cold conditions occur when average temperatures are lower than 14° F. The ground is usually frozen and the snow dry. These low temperatures and wind increase the need to protect the entire body. Dry cold requires layered clothing that insulates against a wind-chill. The inner layers of insulation must be protected by a water-repellent, wind-resistant outer layer.



Intense Cold.

Intense cold air temperatures (-5 to -25° F) are in the range where materials begin to change, adversely affecting operations. Fuels gel, back blast areas triple, artillery fires drop 100 per 1000 meters, water in containers freezes quickly. Appropriate protective clothing is required.

Extreme Cold.

Extreme cold (below -25° F) inhibits full-scale combat. Special fuels and lubricants are required, rubber becomes stiff and brittle, and close tolerances are affected. Operator personnel must have special protection from the elements.

WIND-CHILL CHART

Windchill Index

Wind Speed (MPH)	ACTUAL THERMOMETER READING (°F)																	
	50	40	30	20	10	0	-10	-20	-30	-40	-50	-60						
CALM	50	40	30	20	10	0	-10	-20	-30	-40	-50	-60						
5	48	37	27	16	6	-5	-15	-26	-36	-47	-57	-68						
10	40	28	16	4	-9	-21	-33	-46	-56	-70	-83	-95						
15	36	22	9	-5	-18	-36	-45	-58	-72	-85	-99	-112						
20	32	18	4	-10	-25	-39	-53	-67	-82	-95	-110	-124						
25	30	16	0	-15	-29	-44	-59	-74	-88	-104	-118	-133						
30	28	13	-2	-18	-33	-48	-63	-79	-94	-109	-125	-140						
35	27	11	-4	-20	-35	-50	-67	-82	-98	-113	-129	-145						
40	26	10	-6	-21	-37	-53	-69	-85	-100	-116	-132	-148						
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%; text-align: center;">LITTLE DANGER <small>(For properly clothed person)</small></td> <td style="width: 33%; text-align: center;">INCREASING DANGER</td> <td style="width: 33%; text-align: center;">GREAT DANGER</td> </tr> <tr> <td colspan="3" style="text-align: center;">DANGER FROM FREEZING OF EXPOSED FLESH</td> </tr> </table>													LITTLE DANGER <small>(For properly clothed person)</small>	INCREASING DANGER	GREAT DANGER	DANGER FROM FREEZING OF EXPOSED FLESH		
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DANGER FROM FREEZING OF EXPOSED FLESH																		

SURVIVAL

Water, Food, Shelter

Protective clothing

* Will to survive* --Training/equipment

Head 60-80% of body heat

- | | |
|---|---|
| <p>C Clean clothing
O Overheating
L Loose, layered clothes
D Dry clothing</p> | <p>(Insulation)
(sweat=perspiration)
(air insulation layers on/off)
(mittens/socks on rucksack unfolded, near body near top of shelter inside sleeping bag shell keep sleeping bag dry)</p> |
|---|---|

THE KEY TO KEEPING WARM IN COLD CLIMATES IS THE WORD C-O-L-D



keep it - **C**lean
avoid - **O**verheating
wear it - **L**oose in layers
keep it - **D**ry

Overheating can cause perspiration which can lead to hypothermia in cold weather situations.

COLD WEATHER INJURIES

NON FREEZING: Hypothermia
Dehydration
Trench foot
Immersion Foot

FREEZING: Frostbite

FACTORS THAT INFLUENCE COLD WEATHER INJURIES (CWI)

Previous CWI	Clothing
Race	Moisture
Geological Origin	Dehydration
Ambient Temperature	Age
Wind Chill Factor	Fatigue
Type of Mission	Other Injury
Terrain	Discipline
Nutrition	Activity
Alcohol, Drugs, Tobacco	Sharp Changes in Weather

PREVENTION OF COLD WEATHER INJURIES

Training
Planning
Weather Data
Foot Care
Proper Use of Gloves/Headgear
Proper Undergarments

HYPOTHERMIA

Hypothermia is when your body's heat loss exceeds the rate that your body can produce it. Your body can produce only a limited amount of heat to keep yourself warm. When your body is producing as much heat as it can and your body temperature is still lowering, you are suffering from hypothermia. Hypothermia can occur no matter what the temperature is.

It is important to know the symptoms and treatment for hypothermia.

CAUSES: Heat loss exceeds heat production

- Wind/water chill
- Radiation--heat like light
- Conduction--sitting on cold surface--handling cold objects
- Convection--wind/water
- Evaporation--wet clothing
- Respiration--breathing cold air

Symptoms:

Intense shivering	Blueness of skin
Feeling of deep/cold numbness	Slow, weak, irregular pulse
Muscle tensing	Slurred speech
Fatigue	Retreat inward psychologically

Poor coordination
Disorientation

Dullness
Apathy

Treatment:

- Immediately raise body temperature
 - Shelter from wind and weather
 - Insulate from ground
 - Replace wet clothing with dry
 - Increase exercise if possible
 - Give hot drinks and food
 - Get in warm sleeping bag
 - Shared body warmth
 - Hot packs/hand warmers under armpits and groin area
-

DEHYDRATION

Cause: Not consuming as much water as the body uses

Symptoms of normal dehydration:

- | | |
|--------------------|-----------------------------|
| Higher temperature | Weakness |
| Poor skin turgor | Confusion |
| Upset stomach | Dryness of mouth and throat |
| Dizziness | Difficulty swallowing |

Symptoms of SEVERE dehydration: Similar to hypothermia

Typical hypothermia/dehydration differentiation test:
Warm belly--dehydration
Cold belly-- hypothermia

Cold weather dehydration can lead to total body core cooling.

TRENCH FOOT

- Cause:** Exposure to wet and cold around freezing
- Symptoms:** Feet and toes are pale and numb, cold, and stiff
- NOTE:** If preventive action not taken at this stage feet will swell and become painful!

Treatment: Do NOT rub or massage

Clean carefully with soap and water if indoors
Dry, elevate, and expose to room temperature
Stay off feet and replace socks

IMMERSION FOOT

Cause: Prolonged immersion in cold water < 50 F or in wet footwear > 12 hours. Aching and stinging pain on prolonged exposure. Initially no unusual

Symptoms: Sensations of pain. Shin becomes shriveled and soft.

NOTE: Handle gently--same as trench foot.

FROSTBITE

Cause: Freezing of skin or tissues due to exposure to temperatures at or below freezing.

Commonly by exposure to liquids that freeze at low temperatures such as gasoline, cleaning solvents, and salt water, or high velocity wind flow or metal surfaces.

EXPOSURE CAN OCCUR IN MINUTES!

Wind or contact with wet clothing may produce an effective temp in freezing range when air temperature is above freezing.

SYMPTOMS: First degree: Aching, tingling sensation with cold and numbness. Skin usually turns red.

Second degree: Pale grey and waxy white.

Third degree: Black--no feeling no blood flow

TREATMENT: Handle gently--same as trench foot. DO NOT use water to warm affected areas.

CHEEKS: Cover with warm hands until pain returns

FINGERS: Place uncovered under arm pits or belly next to skin.

FEET: Bare feet against belly of companion, under clothing avoid rubbing or massaging. Don't pop blisters!

CLOTHING: DRY, and proper for weather.

EXERCISE: Routine exercise of face, fingers, and toes.
