Criteria		Controls		
			Physical Activity for Soldiers	
Heat Condition/ Category	WBGT Index F	Water Intake Quart/Hour	Acclimatized Work/Rest	Unacclimitized Soldiers and Trainees
1	78-81.9	At least 1/2	Continuous	
2	82-84.9	At least 1/2	50/10 min	Use discretion in planning heavy exercises.
3	85-87.9	At least 1	45/15 min	Suspend strenuous exercise during first 3 weeks of training. Training activities may be continued on a reduced scale after the second week of training. Avoid activity in direct sun.
4	88-89.9	At least 1 1/2	30/30 min	Curtail strenuous exercise for all personnel with less than 12 weeks of hot weather training.
5	90 & up	More than 2	20/40 min	Physical training and strenuous exercise are suspended. Essential operational commitments not for training, where risk of heat casualities may be warranted, are excluded from suspension. Enforce water intake to minimize expected heat injuries.

work activities during cooler times of the day, and controlling factors influencing heat injuries (such as lack of acclimatization, fever/vomiting/diarrhea, poor physical conditioning, obesity, use of diuretics or alcohol, and record of previous heat injury.)

Overexposure to solar radiation may sunburn exposed skin, thereby influencing more serious heat injuries. All rest periods (and if possible, work activities) should be conducted in the shade. Head gear should be worn to shade the face and neck, and uniforms should be worn in a manner to cover as much exposed skin as possible. High-grade sunscreen (SPF 15 or higher) should be applied to all skin exposed to solar radiation, especially the nose, ears, and the back of neck and hands.

Wind and dust irritation to eyes and exposed skin should be minimized through the use of sunglasses and lip balm, and through proper wear of the uniform.

All cold weather injuries, to include trench/immersion foot, frostbite, hypothermia, and carbon monoxide poisoning, are preventable with proper preventive measures.

The windchill chart contained in this guide should be used by unit leaders when planning and operating in cold weather operations. Exposure times for soldiers engaged in patrols,

WIND SPEED (IN MPH)	ACTUAL TEMPERATURE (°F)											
	50	40	30	20	10	0	-10	-20	-30	-40	-50	-60
	EQUIVALENT CHILL TEMPERATURE (°F)											
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	3	-9	-21	-33	-46	-58	-70	-83	-95
15	36	22	9	-5	-18	-32	-45	-58	-72	-85	-99	-112
20	32	18	4	-10	-25	-39	-53	-67	-82	-96	-110	-124
25	30	15	0	-15	-29	-44	-58	-74	-89	-104	-118	-133
30	28	13	-2	-18	-33	-48	-63	-79	-94	-109	-125	-140
35	27	11	-4	-20	-35	-51	-67	-82	-98	-113	-129	-145
40	26	10	-6	-22	-37	-53	-69	-85	-101	-117	-132	-148
(WIND SPEEDS GREATER THAN 40 MPH HAVE LITTLE ADDITIONAL EFFECT)	LITTLE DANGER (If exposure less than 5 hrs to dry skin. Greatest hazard from false sense of security.)				INCREASING DANGER (Exposed skin may freeze within 1 minute.)			GREAT DANGER (Exposed skin may freeze within 30 seconds.)				

guard mounts, and motor movements in unheated environments must be minimized when chill temperatures reach the "Increasing Danger" and "Great Danger" zones.

Each unit should appoint a cold injury control officer or non-commissioned officer (usually the field sanitation team member) to enforce and monitor cold weather injury preventive measures. The buddy system should be used by all soldiers to identify and treat early symptoms of cold weather injury.

The body's extremities, such as the feet and hands, are especially susceptible to cold weather injuries. Insulated rubber combat boots or regular overboots should be worn to keep feet warm and dry. Socks should be replaced daily with clean, dry socks, and foot powder should be used to maintain good foot hygiene. Gloves or mittens should be worn to keep hands warm. Metal, snow, or other objects should not be touched with bare hands.

Cold weather clothing should be worn in loose layers to permit insulating layers of air and good blood circulation to all parts of the body. Clothing should be kept dry, clean, and in good repair to prevent loss of insulation. Layers of clothing

should be loosened or removed during strenuous activities or when in warm enclosures to prevent perspiration.

Soldiers should remain active to maintain good blood circulation and generate body heat. They should sit, stand, and sleep on insulating material (such as wood or cardboard) rather than on the ground or snow. Soldiers should eat all meals and drink plenty of fluids to generate heat and prevent dehydration. They should sleep in well ventilated areas, and never in or near vehicles with running engines, to prevent carbon monoxide poisoning.

Special host factors (such as age, rank, race, geographic origin, previous cold injury, fatigue, and use of drugs/medications) should be identified and included in every unit's cold weather injury prevention plan.

Water

Waterborne diseases are another potential source of illness for soldiers deployed to the Korean peninsula. Local drinking water sources should be considered unreliable. Therefore, unless approved by medical authorities, all local drinking water

should be properly treated with iodine or chlorine prior to consumption.

Since freezing non-potable water does not disinfect it, local ice also is considered unreliable. Contrary to popular belief, alcohol in alcoholic beverages does not disinfect non-potable water and ice. Therefore, only ice from ice plants approved by medical authorities should be used for cooling food and drinks, as well as direct consumption.

Field water tanks and other storage containers are easily contaminated by inadequate disinfection practices, wind and airborne agents, and other sources of contamination. These containers should be inspected prior to filling, and water disinfection levels should be maintained at all times.

Field water supplies should be disinfected with either iodine or chlorine prior to consumption. Bulk water supplies should be disinfected with either bulk calcium hypochlorite (NSN 6810-00-55-0471) or calcium hypochlorite ampules (NSN 6850-00-270-6225) to a minimum of 5 parts per million of free available chlorine (FAC) using the chlorination chart contained in this guide. Individual canteens may be disinfected using two

iodine tablets (NSN 6850-00-985-7166) for each quart of water. In both cases, the disinfectant must thoroughly mix with the water and stand for at least 30 minutes prior to consumption.

Most reservoirs, lakes, rivers, streams, and some beach areas are contaminated due to local waste disposal practices. Therefore, soldiers should avoid swimming, wading, and bathing in local waterways.

AMOUNTS OF HIGH TEST HYPOCHLORITE (CALCIUM HYPOCHLORITE) OR BLEACH NEEDED TO MAKE UP A 5 PPM DOSE IN VARIOUS VOLUMES OF WATER

	CALCIUM HYPOCHLORITE			5% BLEACH	
Volume (gals)	Ampules	MRE Spoon	MESSKIT Spoon	MRE Spoon	MESSKIT Spoon
5	0.5			0.5	
10	1.0			1.0	
20	1.0			2.0	
32	2.0			2.0	1.0
36	2.0	0.5		3.0	1.0
50	3.0	0.5		3.0	1.0
55	3.0	0.5		4.0	1.0
100	5.0	1.0		7.0	2.0
150	8.0	1.0		10.0	3.0
160	9.0	1.0		11.0	3.0
250	14.0	2.0	0.5	17.0	5.0
400	22.0	3.0	1.0	26.0	7.0
500	27.0	3.0	1.0	33.0	9.0
1000	54.0	7.0	2.0	66.0	18.0
3000	162.0	20.0	6.0	196.0	54.0
5000	270.0	33.0	10.0	327.0	90.0
10000	541.0	66.0	20.0	653.0	180.0
20000	1081.0	132.0	39.0	305.0	360.0
50000	2704.0	330.0	97.0	3263.0	901.0

Food

Sanitation standards are lower than those enforced on U.S. military installations and in the United States. No seafood or shellfish should be eaten raw. Leafy vegetables may be contaminated with enteric agents and should be soaked in a chlorine solution for at least 30 minutes before consumption. The solution can be prepared by mixing 1 tablespoon of ordinary household bleach to 1 gallon of potable water. All meats, poultry, and eggs must be thoroughly cooked. Perishable food should be refrigerated, stored covered, heated to a minimum of 140°F, and served immediately.

Personal Hygiene

Personal hygiene can be neglected in a field environment, which presents certain health risks. Personal hygiene should include bathing as often as possible. If complete bathing facilities are not available, areas of perspiration should be washed daily with a dry cloth, including the following: any areas where the skin may fold, under arms, and genitalia. Frequent hand washing before and after using the latrine and meals is important. Talcum powder will help between thighs

and under breasts. Maintenance of clean, dry clothing should be practiced as often as needed (dry socks, underpants, boots). Applying foot powder will help prevent fungal infections. To reduce transmission of respiratory diseases, crowding in living spaces should be minimized, soldiers should sleep head to foot, and good ventilation should be maintained.

Sexually Transmitted Disease Prevention

All personnel should be educated and convinced of the serious risk of HIV/STD associated with prostitutes anywhere in the world. Positive command involvement is invaluable. Medical departments/representatives should closely monitor STD rates. Rates over 1% per month should stimulate aggressive reeducation. Punitive or restrictive measures have usually resulted in a worsened STD problem. Condoms should be freely available to all personnel who elect to have sexual conduct. Abstinence is the foolproof method for prevention of STDs, as condoms are not 100% effective in the prevention of disease transmission.

Insects

The use of personal protective measures (ppm), such as repellent, clothing, impregnated bed netting, sleeping off the floor, checking all articles of clothing before donning, shaking out bedding before entering, and "buddy" inspections, is extremely desirable to limit the insect threat. The army's current approach to insect repellents involves use of two procedures, a DEET (N-N-diethyl-3-methylbenzamide, formerly N-N-diethyl-n-toluamide) containing repellent lotion for skin (NSN 6840-01-284-3982) and an aerosol clothing repellent called permethrin (NSN 6840-01-278-1336). Proper wearing of the uniform in conjunction with this system will provide nearly complete protection from vector-borne diseases.

The repellent lotion should be applied to exposed skin including ears, face, and neck. Its area of application should extend 2 to 3 inches under the edges of the uniform to prevent sand flies and other biting insects from crawling into those areas.

The permethrin repellent is a spray that must be applied according to the directions on the can. The entire uniform exterior must be sprayed until it looks wet. The permethrin also should be applied to bed netting because the mesh is too large to be a barrier to small sand flies.

D-phenthrin aerosol insecticide (NSN 6840-01-067-6674) or pyrethrum aerosol (NSN 6840-00-823-7849) can be sprayed inside bed nets or closed tents before retiring to kill any insects trapped inside.

Maintaining personal hygiene, effectively disposing of garbage and human waste, and keeping food and water sources covered and fly-proof also are of paramount importance.

It is recognized that implementing these measures may be severely restricted by the tactical situation; however, keep in mind that historically, military combat power has been reduced more from vector-borne disease than from direct combat casualties.

HAZARDOUS ANIMALS AND PLANTS

Snakes

The Korean mamushi (Agkistrodon blomhoffi), Viperidae, is the only venomous snake found on the Korean peninsula, primarily in southern areas.

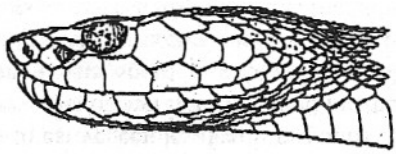
Invertebrates

Scorpions, centipedes, and black widow spiders occur throughout the Korean peninsula.

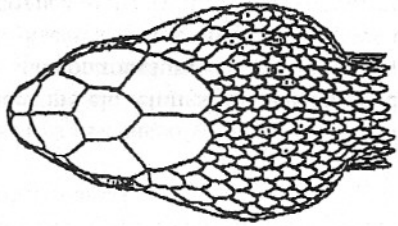
Venomous Threats

Reports of venomous bites from snakes and spiders to soldiers in the field are almost nonexistent. Awareness and preventive measures are key in avoiding a bite or sting from snakes or spiders. Boots and clothes should be shaken before putting them on. Troops should not go barefoot, sleep on the ground, or put their hands in crevices and holes. The keeping of snakes, spiders, or other native creatures (including dogs) as pets is prohibited.

Soldiers at work and at rest are protected from arthropods by using correct individual protective measures for clothing, repellent, screened billets, and bed nets.



View of the head of a pit viper of genus Ankistrodon.



Plants

Nettles, lacquer trees, poison ivy, poison sumac, agrimony, cow parsley, and soapberry produce a contact vesicant (an agent that induces blistering).

Rodents

Zoonotic diseases associated with rodents have a potential impact on missions in field settings. Knowledge concerning the habits, habitats, and control of rodents is key in the prevention of rodent-borne diseases. There are several types of rodents that are of importance to the military: the Norway rat, the roof rat, the house mouse, and the field mouse (Apodemus agrarius coreae). The Norway rat is found at ground level in tapered regions, and prefers foods like meats, fish, and garbage. The roof rat prefers to eat vegetables, fruits, or grains. The roof rat harbors between walls of buildings, is found in attics, but also may nest in trees. The house mouse adapts to a variety of living conditions throughout the world, closely associated with humans. The house mouse will eat any food available but prefers grain and grain products.

Rodents are not easily trapped. Certain signs are useful indicators for trapping, identification, and control of rodents: droppings, sounds, urine, rubmarks, burrows, gnawing, tracks, runways, odor, and dead rodents.

A good rodent control program is based on knowing where they live, feed, and travel and the extent of infestation. The most cost-effective commensal rodent control is achieved by making the environment as unattractive as possible to rodents without making it unfit for its intended use. The cooperation of everyone involved is necessary, and the method of control should be adapted to fit the local conditions and area. Control begins with habitat management, environmental cleanup, or sanitation for commensal rodents, which involves reduction or elimination of sources of food, water, and harborage. Elimination of food sources includes waste management, storing foods in leak-proof containers, and either recycling or disposing of waste at a sanitary landfill. Elimination of water sources includes repairing leaks in plumbing and eliminating water-holding items, such as old tires, cans, and other refuse. Eliminating harborage includes cleaning up debris, rubble, building materials, and trash.

The next step is rodent proofing. Exclude rodents from buildings and warehouses by having every possible opening in outer walls closed. Make all floor/wall junctions and all exterior doors tight enough to prevent rodent entry. Install guards across runways to prevent entry at loading doors. Repair all openings larger than 1/4 in (0.6 cm). Population reduction can be accomplished by mechanical and chemical means. Snap traps, live-catch traps, and glue boards are mechanical control methods, whereas rodenticides are used in chemical control. Elimination of rodents and careful thorough cleaning with sodium hypochlorite or phenolics must be accomplished when a disease outbreak caused by rodents is encountered. Pest management personnel should also be contacted. The following preventive measures are imperative for all field operations.

- Areas with evidence of significant rodent infestation (burrows, droppings, odor, and dead rodents) should not be used as campsites.
- Rodent control measures should be undertaken during encampment, including elimination of garbage,

sources of food, and harborage (debris, rubble, building materials, and trash).

- Personnel should never sleep on bare ground since inhalation of dust is a risk factor for Korean hemorrhagic fever.
- Do not use mud or vegetation for camouflage, as this increases chances of inhalation.
- Dust masks (or military scarves) should be used whenever dusty conditions are encountered.
- Dust control measures (wet sweeping, wetting roads, etc.) should be used to the fullest extent possible.

COMBAT STRESS

Historically, combat stress reactions occur at a rate of about one person for every three or four wounded in action. In a tense situation where opposing forces are anticipating, but not engaging in action, and where environmental stresses are high,

the number of stress reactions and stress-related diseases and non-battle injuries can skyrocket. The following factors all are applicable in this theater: defensive posture, high nuclear/biological/chemical (NBC) threat and use of mission oriented protective posture (MOPP) gear, harsh climate, inadequate water supply, and high disease threat. Protective measures to be taken include maintaining high unit identity and cohesion, placing combat-experienced personnel throughout the unit, encouraging popular support both in the theater and at home, keeping the troops informed, refraining as much as possible from the "hurry up and wait" routine, and making tasks meaningful.

A high degree of training will instill confidence in the equipment--not only in firepower, but also in medical capabilities and chemical protective measures. Uncertainty about family and the folks back home adds to the stress load. Family issues like debt, sickness, and divorce, which often are difficult to resolve at home, become even more burdensome upon deployment. Communication by regular mail probably is the most important measure that can alleviate stress problems. A designated, concerned, and reliable point of contact in the

rear who specifically handles family problems and special communications is required.

Misconduct combat stress reactions, such as abusing drugs and alcohol, fighting among soldiers, and awakening of racial tensions, can be expected to arise due to the alien culture and anti-Americanism. Again, protective factors include restricting alcohol availability, enforcing illegal drug prohibition, and communicating popular support for the deployment locally and in CONUS. Promoting a spirit of cooperation with the local population will introduce the troops to the foreign culture and contribute to an understanding of their ways, forestalling a polarization between the soldier and the people he has been tasked to defend.

The burden of treating combat stress is on the leadership, and the key to its treatment is keeping the individual out of the medical system. Stress problems should be treated as far forward as possible while still giving the patient 2 to 4 days rest and change of routine. The patient should not be allowed total inactivity, but rather given purposeful, simple chores, such as helping other patients in an aid station. Once labeled with a medical condition, soldiers "acquire" symptoms that they

believe will reflect a genuine medical condition -- hence "battle fatigue" results in a weary soldier and "shell shock" results in a dazed patient. Medical symptoms that do not seem to be substantiated by clinical findings should be suspected of being stress-induced and treated far forward, followed carefully, but not labeled with a diagnosis likely to be abused as a "ticket home," so that manifesting such a problem may be considered an honorable means of being evacuated to CONUS. Pride in the unit, confidence in equipment and leadership, identification of stress-related problems, and treatment of those problems forward, but with compassion, are major command objectives to avoid degradation of troop morale.

FIELD SANITATION TEAM

When organic and attached medical personnel are available, they will be appointed and will serve as the field sanitation team for the unit. They will serve as advisors to the commander, train unit personnel in individual preventive medical measures, and supervise or conduct basic preventive medical services. Company- and battery-size units deploying without organic or attached medical personnel will appoint a field sanitation team. These teams provide the small-unit

commander with organic expertise to monitor the status of unit preventive medical measures, and limited capability to control insect and rodent vectors in the unit area.

The field sanitation team will conduct training within the unit on individual preventive medical measures against disease and injury as these relate to an assessment of the medical threat in the prospective or defined areas of operation.

Members of field sanitation teams will receive training from supporting medical resources before deployment or field exercises to ensure that small units have the preventive medical resources to operate in adverse disease and/or climatic environments.

REFERENCES

Most of the material in this chapter was taken from the pamphlet "Preventive Medicine Guide for Leaders in Korea" developed by the 5th Preventive Medicine Unit, 18th Medical

Command, United States Forces Korea, with input and approval from the Surgeon, United States Pacific Command.