

FM 4-25.12 (FM 21-10-1)

**UNIT FIELD
SANITATION
TEAM**

HEADQUARTERS, DEPARTMENT OF THE ARMY

DISTRIBUTION RESTRICTION: Approved for public release; distribution is unlimited.

UNIT FIELD SANITATION TEAM**TABLE OF CONTENTS**

		Page
PREFACE	iv
CHAPTER	1. UNIT FIELD SANITATION TEAM DEVELOPMENT	
Section	I. General	1-1
	1-1. Introduction	1-1
	1-2. Objective of Field Sanitation Team Training	1-1
	1-3. Responsibilities	1-1
	1-4. General Guides	1-1
Section	II. Master Schedule (20 Hours)	1-2
CHAPTER	2. INSTRUCTOR'S REFERENCE MATERIAL	
Section	I. Introduction: Relationship Between the Incidence of Disease and the Environment	2-1
	2-1. Importance of the Field Sanitation Team	2-1
	2-2. The Medical Threat	2-1
	2-3. The Individual in a Field Environment	2-4
	2-4. Duties of the Field Sanitation Team	2-4
	2-5. Preventive Medicine Measures	2-5
Section	II. Water Supply	2-6
	2-6. Importance of Water in the Practice of Sanitation	2-6
	2-7. Responsibilities for the Production of Potable Water in the Field	2-8
	2-8. Terms and Definitions	2-8
	2-9. Sources of Water	2-9
	2-10. Water Treatment	2-10
Section	III. Food Service Sanitation	2-16
	2-11. Importance of Sanitary Practices in Food Handling	2-16
	2-12. Factors that Most Often Cause Foodborne Disease Outbreaks	2-16
	2-13. Transportation of Food	2-17
	2-14. Storage of Food	2-17
	2-15. Personal Hygiene of Food Handlers	2-20
	2-16. Cleaning and Sanitizing Utensils	2-21
	2-17. Physical Facilities	2-21
	2-18. Preparing and Serving Food	2-22
	2-19. Inspection of Food Service Facilities	2-23

DISTRIBUTION RESTRICTION: Approved for public release; distribution is unlimited.

*This publication supersedes FM 21-10-1, 11 October 1989.

		Page
Section	IV. Waste Disposal	2-23
	2-20. Importance of Proper Waste Disposal in Disease Prevention	2-23
	2-21. Responsibilities for Waste Disposal	2-24
	2-22. Waste Disposal Methods	2-24
	2-23. Field Facilities for Human Waste Disposal	2-24
	2-24. Garbage Disposal	2-28
	2-25. Liquid Waste Disposal	2-29
	2-26. Rubbish Disposal	2-31
	2-27. Hazardous Waste Disposal	2-31
Section	V. Arthropods and Diseases	2-31
	2-28. General	2-31
	2-29. Direct Arthropod Affects on Human Health	2-32
	2-30. Arthropodborne Diseases	2-34
Section	VI. Arthropod Control	2-35
	2-31. General	2-35
	2-32. Preventive Medicine Measures	2-36
	2-33. Chemical Control (Pesticides)	2-38
Section	VII. The Biology and Control of Rodents	2-39
	2-34. General	2-39
	2-35. Rodents and Human Disease	2-39
	2-36. Norway Rat	2-41
	2-37. Roof Rat	2-41
	2-38. House Mouse	2-42
	2-39. Equipment Used in Pesticide Applications	2-43
	2-40. Control Measures	2-44
Section	VIII. Heat Injuries	2-47
	2-41. General	2-47
	2-42. Predisposing Factors Leading to Heat Injury	2-48
	2-43. Types of Heat Injury	2-48
	2-44. Prevention of Heat Injuries	2-49
	2-45. Use of the Wet Bulb Globe Temperature Index in the Control of Physical Activity	2-54
Section	IX. Cold Injuries	2-55
	2-46. General	2-55
	2-47. Predisposing Factors	2-55
	2-48. Prevention of Cold Injuries	2-58
Section	X. Toxic Industrial Chemical Hazards	2-62
	2-49. General	2-62
	2-50. Routes of Entry	2-62
	2-51. Toxic Industrial Chemical Classifications	2-62
	2-52. Chemical Actions and Effects	2-63
	2-53. Carbon Monoxide	2-64
	2-54. Hydrogen Chloride	2-65

	Page
2-55.	Bore/Gun Gases 2-65
2-56.	Liquid Chemicals 2-65
2-57.	Prevention and Control 2-67
Section XI.	Noise Hazards 2-67
2-58.	General 2-67
2-59.	Factors Determining the Degree of Hazard 2-69
2-60.	The Mechanics of Hearing 2-69
2-61.	The Effects of Noise on the Ear 2-70
2-62.	Preventive Medicine Measures 2-70
APPENDIX A.	FIELD SANITATION TEAM TRAINING COURSE A-1
Lesson 1.	Introduction A-2
Lesson 2.	The Medical Threat to Field Forces and Preventive Medicine Measures A-4
Lesson 3.	Personal Hygiene and Preventive Medicine Measures A-10
Lesson 4.	Water Supply in the Field A-18
Lesson 5.	Food Service Sanitation in the Field A-30
Lesson 6.	Waste Disposal in the Field A-40
Lesson 7.	Arthropods and Disease A-48
Lesson 8.	Management of Arthropods through Individual Preventive Medicine Measures A-54
Lesson 9.	Management of Arthropods through Nonchemical (Sanitation) and Chemical Practices A-60
Lesson 10.	Rodent Management A-67
Lesson 11.	Preventing Heat Injury A-73
Lesson 12.	Preventing Cold Injury A-80
Lesson 13.	Controlling Toxic Industrial Materials A-89
Lesson 14.	Noise Hazards and Noise Management A-101
Lesson 15.	Field Sanitation Team Equipment and Supplies A-108
APPENDIX B.	CHECKLIST OF EQUIPMENT AND MATERIALS FOR FIELD SANITATION TEAM TRAINING B-1
B-1.	Equipment and Materials to be Supplies B-1
B-2.	Equipment and Materials which the Student is to Bring to Class B-2
APPENDIX C.	FIELD SANITATION TEAM MATERIALS C-1
APPENDIX D.	SAMPLE UNIT STANDING OPERATING PROCEDURE FOR FIELD SANITATION D-1
GLOSSARY Glossary-1
REFERENCES References-1
INDEX Index-1

PREFACE

The purpose of this field manual (FM) is to provide doctrine and training procedures for unit field sanitation teams (FST). In addition, a training program in the application of personal protective measures (PPM) is included for personnel appointed as members of the FST for each company, troop, or battery. This publication contains a proposed 20-hour master training schedule which may be adjusted as necessary; a text that may serve as reference material for the FST instructor; and supporting illustrations for the instructors assigned the training task. This publication provides guidance to the commanders, unit leaders, and soldiers for implementing unit field sanitation and preventive medicine (PVNTMED) measures in the field. This publication is written to further aid the commander and his unit leaders in the continuing effort of reducing the disease and nonbattle injury (DNBI) rates during deployments.

This publication provides information on PPM for the unit FST on applying unit-level PPM.

This publication implements or is in consonance with the following North Atlantic Treaty Organization (NATO) International Standardization Agreements (STANAGs), American, British, Canadian, and Australian (ABCA) Quadripartite Standardization Agreements (QSTAGs) and Quadripartite Advisory Publications issued by the Washington Standardization Officers:

NATO STANAG	ABCA QSTAG	TITLE
2048		Chemical Methods of Insect and Rodent Control
2122		Medical Training in First Aid, Basic Hygiene, and Emergency Care. Edition 2. (Latest Amendment, 13 June 1986.)
2136		Minimum Standards of Water Potability in Emergency Situations
	245	Minimum Requirements for Water Potability (Short- and Long-Term Use)
2885		Procedures for the Treatment, Acceptability, and Provision of Potable Water in the Field
2899		Protection of Hearing. Edition 2.
2981		Prevention of Cold Injury
	889	Essential Field Sanitary Requirements
	892	Prevention of Cold Injuries
	891	Prevention of Heat Related Injuries

The staffing and organization structure of the FST is established in the living tables of organization and equipment (TOE). However, such staffing is subject to change to comply with manpower requirements criteria outlined in Army Regulation (AR) 71-32 and can be subsequently changed by your modification TOE.

Users of this publication are encouraged to submit comments and recommendation to improve the publication. Comments should include the page, paragraph, and line(s) of the text where the change is recommended. The proponent for this publication is the US Army Medical Department Center and School (AMEDDC&S). Comments and recommendations should be forward directly to: **Commander, AMEDDC&S, ATTN: MCCS-FCD-L, 1400 Grayson Street, Fort Sam Houston, Texas 78234-5052.**

Use of trade or brand names in this publication is for illustrative purposes only and does not imply endorsement by the Department of Defense (DOD).

Unless this publication states otherwise, masculine nouns and pronouns do not refer exclusively to men.

CHAPTER 1

UNIT FIELD SANITATION TEAM DEVELOPMENT**Section I. GENERAL****1-1. Introduction**

Military PVNTMED is: *The identification of the medical threat, assessing the risk of the medical threat in terms of operation requirements, medical surveillance, and the providing of recommendations for the mitigation of adverse health effects. This can include the anticipation, prediction, identification, prevention, and control of communicable diseases including vector-, food-, and waterborne diseases toxic industrial chemicals as well as low level chemical warfare agents.* The US Army has gone to great lengths to eliminate *medical threats* in order to reduce the debilitating illnesses and injuries that has, over the course of American history, caused more casualties than actual battlefield injuries within US Armed Forces. In some cases, debilitating illnesses and injuries have destroyed the fighting effectiveness of many Army units deployed in global environments. The DNBI rates have gradually been lowered since the Civil War. However, it is only through rigid PVNTMED discipline from the highest command headquarters of a deploying force down to the small unit commander. The units and the soldiers within those units are all responsible for seeing that the tenets of PVNTMED are followed (see FM 4-02.17). When a problem exists beyond unit capabilities, the brigade or division PVNTMED section or corps PVNTMED detachments should be called upon to assist in countering the threat.

1-2. Objective of Field Sanitation Team Training

One objective of FST training is to ensure that team members understand their roles and responsibilities. Another objective is to ensure that small units have the PVNTMED resources to ensure basic field sanitation measures, promote personal hygiene, and reduce DNBI rates. Commanders and troops must remember that DNBI is the leading cause of combat ineffectiveness. The medical threat to the force may be the most serious overall threat during current day operations, especially during stability operations and support operations.

1-3. Responsibilities

The commander is responsible for appointing, training, and equipping the FST within his unit (see AR 40-5). Army Regulation 40-5 requires that members of the FST (organic or attached medical or nonmedical personnel) will receive training from supporting medical resources before deployment or field exercises to assure that small units have the PVNTMED resources to operate in adverse disease and/or climatic conditions.

1-4. General Guides

a. Role of the Field Sanitation Team. The role of the FST is to aid the unit commander in protecting the health of the command. This is accomplished by advising and assisting the commander in the many duties essential to reducing DNBI. By providing instruction and supervision, and assisting, inspecting,

FM 4-25.12

and reporting, the FST ensures that appropriate field sanitation facilities are established and maintained; that effective sanitary and control measures are applied; and that effective PMM are practiced.

b. Selection of Team Members.

(1) The first sergeant selects team members, and the commander appoints the personnel whose normal field duties allow them to devote sufficient time to field sanitation activities. Those personnel, whose military occupational specialty and training require full time operation under field conditions, should not be appointed members of the FST. Selected team members should have ample time for FST duties.

(2) The FST consists of at least two soldiers, one of whom must be a noncommissioned officer when organic medical personnel are not available. If available, one member should be a medic and the leader of the FST.

(3) Selected team members should have at least 6 months service remaining with their unit.

c. Training of Team Members.

(1) The training should be conducted under field conditions and with the frequency necessary for the team to maintain proficiency.

(2) Principles and techniques of effective military instruction, including examination, are defined and discussed in FMs 25-4, 25-100, and 25-101.

d. Application of This Manual. The master schedule and lesson plans provided in this publication should be considered as guides to instruction. The content of the material presented during training classes is flexible and may be tailored to the situation and type of units for which the training is to be conducted.

Section II. MASTER SCHEDULE (20 Hours)

PERIOD	SUBJECT	HOURS AND TYPE OF INSTRUCTION	SCOPE OF INSTRUCTION	REFERENCES
1	INTRODUCTION, MEDICAL THREAT AND PMM	1-LECTURE AND CONFERENCE	THE IMPORTANCE OF FST, THE MEDICAL THREAT, PMM, AND THE INDIVIDUAL IN THE FIELD ENVIRONMENT.	AR 40-5; FM 21-10; FM 4-02.17; AND CHAPTER 2 OF THIS PUBLICATION.
2	PERSONAL HYGIENE AND PMM	1-LECTURE AND CONFERENCE	THE ROLE OF THE FST IN RELATION TO THE UNIT COMMANDER AND SOLDIERS. PERSONAL HYGIENE AND PMM NOT DISCUSSED UNDER OTHER SUBJECTS.	AR 40-5; FM 21-10; FM 4-02.17; CHAPTER 2 OF THIS PUBLICATION.

Section II. MASTER SCHEDULE (20 Hours) (Continued)

PERIOD	SUBJECT	HOURS AND TYPE OF INSTRUCTION	SCOPE OF INSTRUCTION	REFERENCES
3	WATER SUPPLY	2-LECTURE AND PRACTICAL EXERCISES	IMPORTANCE OF WATER IN THE PRACTICE OF SANITATION INCLUDING WATER AS A VEHICLE IN TRANSMISSION OF DISEASE. QUANTITY OF WATER NEEDED FOR SOLDIERS. PRODUCTION OF POTABLE WATER. CHLORINE RESIDUAL DETERMINATION.	AR 40-5; FM 21-10; FM 4-02.17; STANAG 2136; QSTAG 245; CTA 8-100; AND CHAPTER 2 OF THIS PUBLICATION.
4	FOOD SERVICE SANITATION	1-LECTURE AND DEMONSTRATION	SANITARY FOOD HANDLING PRACTICES. TRANSPORTATION AND STORAGE OF FOOD. FOOD HANDLERS PERSONAL HYGIENE. CLEANING AND SANITIZING UTENSILS AND PHYSICAL FACILITIES. FOOD PREPARATION AND SERVING FOOD. FOOD SERVICE FACILITIES INSPECTION.	AR 40-5; FM 10-23; FM 4-02.17; FM 21-10; FM 8-34; TB MED 530; CHAPTER 2 OF THIS PUBLICATION.
5	WASTE DISPOSAL IN THE FIELD	2-DEMONSTRATION, CONFERENCE, AND PRACTICAL EXERCISE	IMPORTANCE OF PROPER WASTE DISPOSAL IN PREVENTING DISEASES AND PESTS. CONSTRUCTION OF FACILITIES FOR PROPER WASTE DISPOSAL IN THE FIELD. SPECIAL PROBLEMS IN DISPOSAL. MAINTENANCE AND CLOSING OF WASTE DISPOSAL FACILITIES.	AR 40-5; FM 21-10; FM 4-02.17; AND CHAPTER 2 OF THIS PUBLICATION.
6	ARTHROPODS AND DISEASE	1-LECTURE	DIRECT AND INDIRECT WAYS ARTHROPODS AFFECT THE HEALTH OF SOLDIERS.	AR 40-5; FM 21-10; FM 4-02.17; <i>MILITARY PEST MANAGEMENT HANDBOOK</i> ; AND CHAPTER 2 OF THIS PUBLICATION.
7	CONTROL OF ARTHROPODS THROUGH FIELD SANITATION AND INDIVIDUAL PMM	2-LECTURE AND DEMONSTRATION	ENVIRONMENTAL CONTROL OF ARTHROPODS THROUGH FIELD SANITATION. INDIVIDUAL PMM.	AR 40-5; FM 21-10; FM 4-02.17; <i>MILITARY PEST MANAGEMENT HANDBOOK</i> ; AND CHAPTER 2 OF THIS PUBLICATION.
8	CONTROL OF ARTHROPODS WITH PESTICIDES	2-LECTURE, DEMONSTRATION, AND PRACTICAL EXERCISE	CHEMICAL CONTROL, TO INCLUDING PESTICIDES AND EQUIPMENT.	AR 40-5; FM 21-10; FM 4-02.17; <i>MILITARY PEST MANAGEMENT HANDBOOK</i> ; AND SB 3-40.

Section II. MASTER SCHEDULE (20 Hours) (Continued)

PERIOD	SUBJECT	HOURS AND TYPE OF INSTRUCTION	SCOPE OF INSTRUCTION	REFERENCES
9	RODENT CONTROL	2-LECTURE, DEMONSTRATION AND PRACTICAL EXERCISE	HABITS OF RODENTS. RELATION OF RODENTS TO HUMAN DISEASE. ENVIRONMENTAL, MECHANICAL, AND CHEMICAL CONTROL MEASURES.	AR 40-5; FM 21-10; FM 4-02.17; <i>MILITARY PEST MANAGEMENT HANDBOOK</i> ; STANAG 2048; AND CHAPTER 2 OF THIS PUBLICATION.
10	HEAT	1-LECTURE, INJURIES	RECOGNIZE THE TYPES OF HEAT INJURIES, FACTORS INFLUENCING INJURIES, AND PMM.	AR 40-5; TB MED 507; FM 4-02.17; AND CHAPTER 2 OF THIS PUBLICATION.
11	COLD INJURIES	1-LECTURE, DEMONSTRATION, AND PRACTICAL EXERCISE	RECOGNIZE THE TYPES OF COLD INJURIES, FACTORS INFLUENCING INJURIES, AND PMM.	AR 40-5; FM 8-250; FM 4-02.17; DA PAM 40-503; STANAG 2981; AND CHAPTER 2 OF THIS PUBLICATION.
12	TOXIC	1-LECTURE INDUSTRIAL CHEMICAL HAZARDS (NON-NBC)	RECOGNIZE THE TIC THREAT, PLAN FOR TIC, IDENTIFY SOURCES, DEVELOP PROTECTIVE ACTIONS, AND ENFORCE PMM.	AR 40-5; FM 8-250; FM 4-02.17; DA PAM 40-503; AND CHAPTER 2 OF THIS PUBLICATION AND FM 8-500.
13	NOISE HAZARDS	1-LECTURE	RECOGNIZE THE TYPES OF NOISE, THE EFFECTS OF NOISE ON SOLDIERS AND UNIT MISSION, AND PMM.	CHAPTER 2 OF THIS PUBLICATION.
14	EXAMINATION	2-EXAMINATION AND DISCUSSION	A COMPREHENSIVE TEST THAT SERVES AS A VALID, RELIABLE, AND DISCRIMINATING INSTRUMENT FOR EVALUATING THE EFFECTIVENESS OF INSTRUCTION AND INDIVIDUAL STUDENT LEARNING. A DISCUSSION FOLLOWS THE TEST TO ENHANCE STUDENT LEARNING.	FM 25-4; FM 25-100; AND FM 25-101; PLUS ALL LISTED REFERENCES.

CHAPTER 2

INSTRUCTOR'S REFERENCE MATERIAL**Section I. INTRODUCTION: RELATIONSHIP BETWEEN THE
INCIDENCE OF DISEASE AND THE ENVIRONMENT****2-1. Importance of the Field Sanitation Team**

a. The FST is responsible for those PMM that affect units as a whole or are beyond the resources of the individual soldier (AR 40-5). This is a most important responsibility because unit effectiveness is greatly dependent upon the health of its soldiers. Military units are unable to carry out their missions when the soldiers are weakened by disease. The success or failure of an army, the outcome of a war, and the fate of a nation may, therefore, rest upon how well DNBI are prevented through effective PMM in the units. For example, historical records of armies in the field are filled with accounts of failures for which disease was a major contributing factor. This was true of Napoleon in his retreat from Moscow in 1812. Confronted with cold weather and louseborne typhus, his elite army was almost completely decimated. However, Napoleon's loss is understandable in view of his lack of knowledge concerning the medical threat. Yet, modern armies have also experienced great losses from DNBI. Arthropodborne diseases alone were responsible for the loss of 16,576,100 man-days among US Armed Forces during World War II. The debilitating effects of malaria seriously threatened the entire Asiatic-Pacific campaign during World War II.

b. In today's modern world, we find evidence that careless PMM are devastating to the offending armies. For example, during the Soviet-Afghan War, the Soviets deployed some 620,000 troops to Afghanistan. Of these, only a modest 2.33 percent (14,453) were killed or died of wounds; while an unbelievable 76 percent (469,685) of the Soviet force were hospitalized after contracting serious diseases (infectious hepatitis, typhoid fever, plague, malaria, diphtheria, meningitis, dysentery, pneumonia, typhus, and paratyphus).

c. For the US Army, the forerunner of the present FST was established during World War II. When it became apparent that the control of malaria and other arthropodborne diseases was beyond the capability of existing engineer and medical units, commanders of company-sized units were required to appoint vector-control teams. In 1956, the operation of these teams was broadened to include the control of all animal pests. In 1958, health problems encountered in the field by the American Task Force in Lebanon focused attention on the need for a team with broader training. Subsequently, the vector-control team became the FST with its training expanded to include not only the control of potential animal vectors, but also field water supply, food service sanitation, waste disposal, and personal hygiene. The FST, therefore, plays a major role in reducing DNBI. When the unit commander encounters problems beyond the capabilities of the FST, he requests assistance from supporting PVNTMED elements.

2-2. The Medical Threat

a. The impact of casualties caused by DNBI upon military campaigns has been a prominent and a continuous feature of military operations. From the beginning of recorded history up to the present time, armies have had immense problems with heat, cold, and communicable diseases. In all US conflicts, three times as many soldiers have been lost to DNBI as to enemy action. The ultimate objective of a military force, success in battle, demands that troops be maintained in a constant state of good health.

b. There are three major components of the medical threat to field forces:

(1) *Environmental factors.* These include humidity, and significant elevations above sea level, and, of course, heat and cold. Of these, heat and cold are the most significant.

(a) *Heat.* Heat is the most lethal component of all. Those of us born and raised in temperate climates have a hard time relating to heat and its awesome impact. During the 1967 Arab-Israeli conflict, the Israelis enveloped the Egyptians, severing their lines of support. The Egyptians suffered 20,000 deaths due to heat while the Israelis had no deaths and only 128 cases of heat injury. The Israelis demonstrated that health hazards, such as heat, could be as effective as tactical weapons in securing success on the battlefield. In the 1982 US-Sinai Peacekeeping Force, 35 members of an airborne company were incapacitated by the desert heat. These soldiers were so badly dehydrated that they required intravenous fluids to recover. Commanders can minimize the effects of heat by ensuring soldiers drink adequate amounts of water (see paragraph 2-44). Based on the heat category, thirst is a poor indicator of a body's need for water. Commanders should also ensure soldiers consume three meals a day to replace lost electrolytes; and when the tactical situation permits, follow correct work/rest cycles.

(b) *Cold.* Cold weather can also be very incapacitating on the battlefield. In World War II, during the winter of 1944-1945 in the European Theater, over 54,000 US soldiers were admitted to hospitals with cold injuries. Over 90,000 US soldiers were admitted with cold injuries throughout the war. In the 24 days the British were in combat on the Falkland Islands, they sustained 777 total casualties, 109 (or 14 percent) were cold injuries. When the British had the Argentinians surrounded at Port Stanley, they could have waited until the Argentinians exhausted their food and water, but they were forced by the adverse environment to attack, thus sustaining additional combat casualties. Commanders can reduce the risk of cold injuries by incorporating weather data into operations planning; enforcing the proper wearing of the uniform; ensuring that soldiers frequently change wet or damp socks; and when the tactical situation permits, providing warming areas.

(2) *Diseases caused by zoonotic/animal bites.* There are many species of arthropods that transmit diseases which seriously affect military operations. Napoleon's Le Grand Armee numbered over 600,000 when it crossed the Russian border in June of 1812. Although he succeeded in taking Moscow, disease and cold injury decimated his troops, forcing his retreat. Only 100,000 men returned to France. There were 70,000 combat losses versus 430,000 DNBI losses. It is estimated that over 100,000 of Napoleon's soldiers were lost to louseborne typhus. Recently, nearly 50 percent of the US units in Grenada were deployed to that tropical environment without insect repellent. At least one unit was using an ineffective Cuban repellent. Commanders must ensure that soldiers use the DOD Insect Repellent System (33 percent DEET [N, N-diethyl-m-toluidine] on skin, permethrin on uniforms, and proper wear of the uniform); use bed nets when appropriate; and consume prescribed prophylactic medications, when necessary.

(3) *Diseases endemic to the area of operations.* Of these, diarrheal disease can be contracted from contaminated water or food, but in either case it can have a catastrophic impact on the fighting force; Rommel's situation in North Africa is a superb example. Not one of Rommel's original highly successful generals was available to help him when he needed them most—at El Alamein; they had all, over time, been medically evacuated for illness. Rommel, himself, was not present when the battle began; he was in Germany recovering from hepatitis. His chief of staff and his intelligence officer were evacuated just

before the battle and his operations officer was evacuated during the battle—all three for amoebic dysentery. In Operation Bright Star, 1980, the US commander rewarded his troops for a job well done by allowing them to go into town the evening prior to redeployment. Thirty percent of his command contracted shigellosis and were simultaneously vomiting and defecating in the aircraft on the flight back to the states. The above examples are just as relevant today as in the past. Commanders must ensure that soldiers only consume food and water from approved sources; that waste disposal and handwashing devices are constructed; and that unit dining facilities are operated under sanitary conditions.

(a) The commander's responsibilities are not all-inclusive, but outline a few measures that only the commander can enforce. Emphasis is usually placed on those things the commander himself checks; therefore, it is important for him to appoint and train a functional FST because the ultimate responsibility for ensuring the health of soldiers rests with the commander. Commanders must gain a new awareness of the importance of PVNTMED.

(b) The direct relationship between soldier health and success in battle must be emphasized throughout the chain of command. In the Soviet commander's decision-making process, his correlation of forces assesses a degradation of our fighting force over time due to factors such as DNBI. If commanders ignore the medical threat, degradation can be greater over a shorter period. However, with sound PMM, we can maintain our fighting strength and exploit that strength when the enemy expects weakness.

c. In the field, our soldiers have increased vulnerability to DNBI because of—

- The harshness of the environment and the tactical situation. The operational environment may be infested with mosquitoes, sand flies, or other disease carrying pests; it may be hot, dusty deserts or cold, windy plains. Our soldiers and their leaders must be prepared to live and fight in such places.

- The disruption of the body's natural defenses. The human body has an excellent capacity to protect itself against disease and climatic injury; however, the efficiency of these mechanisms is dependent upon our overall well-being. By deploying soldiers halfway around the world, we disrupt their personal biological rhythms. Adding heat or cold, serving meals at irregular hours, and depriving soldiers of sleep soon results in individuals who are more susceptible to illness and combat stress. Additionally, as soldiers have not been exposed to the diseases present in many deployment areas, they are more susceptible to becoming seriously ill from these diseases than the native population. Vectorborne disease may present a hidden threat to deploying units. Immunologically naive soldiers may be at more risk from vectorborne disease than the local populace due to the local populace's relatively higher immunity to them. There may be the mistaken impression that the disease threat is low when it is high for the deployed units; therefore, PMM are essential on all deployments.

- Breakdowns in basic sanitation. Potable water and proper waste disposal are examples of things taken for granted in garrison. Using the latrine or changing your socks becomes a challenge when you are living in a muddy foxhole.

- Consumption of unauthorized rations including locally procured and scavenged food.

2-3. The Individual in a Field Environment

a. Ordinarily, the US soldier has a high standard of personal hygiene when in an environment with convenient facilities. In the field, however, where proper sanitation requires coping with the elements of nature, a problem arises; the soldier is suddenly faced with inconveniences.

b. In garrison, soldiers readily conduct daily personal hygiene. Routine acts of personal hygiene are performed in a conveniently located latrine that is warm and has hot and cold water. However, upon arising in the field, one may feel too cold to change into clean underwear. Even in the summer, a cold-water shower is uncomfortable. Usually, the toilet in the field is not as pleasant as the one in garrison. An ordinarily well-groomed individual may become dirty and unkempt. Filth and disease go hand in hand. Dirty, sweaty socks may cause the feet to be more susceptible to disease. Dirty clothing worn for prolonged periods of time and unwashed hair are open invitations to lice. In addition to keeping uniforms clean, treating with clothing repellent will prevent body louse infestations. The problems entailed in reducing DNBI, therefore, pertain not only to the existing elements of nature but also to the reactions of soldiers brought into the environment. Inadequate individual PMM in the field is one of the most difficult problems to overcome because it requires a sense of responsibility on the part of each individual to try to maintain his health regardless of difficulties encountered.

2-4. Duties of the Field Sanitation Team

The commander establishes the FST duties. Consider the following duties for basic sanitation and arthropod and rodent control:

a. Basic Sanitation and Protection.

(1) Supervise the disinfection of water in the unit area. Instruct soldiers, as necessary, in individual water purification methods (Section II).

(2) Advise the unit food service personnel in the prevention and elimination of deficiencies in food service sanitation. Instruct the soldiers as necessary in methods of washing individual eating utensils (Section III) and dangers of consuming unapproved foods and drinks.

(3) Supervise the construction of garbage and soakage pits and assist the unit commander in inspections for proper disposal of garbage (Section IV).

(4) Supervise the construction of field latrines and urinals and assist the unit commander in inspections for proper sanitation (Section IV).

NOTE

A unit detail is responsible for the actual construction of field waste disposal facilities.

- (5) Assist the unit commander in the guidance and inspection of personnel and facilities to ensure a high level of personal hygiene (paragraph 2-5a).
- (6) Provide guidance as needed in the use of protective measures to prevent arthropodborne disease and heat and cold injuries (paragraph 2-5b).
- (7) Report deficiencies to the unit commander.
- (8) Report possible toxic industrial chemicals (TIC)/toxic industrial materials (TIM) contamination to the unit commander.
- (9) Report existing noise sources in your unit and post “NOISE HAZARD” signs near noise hazard areas and on equipment which presents a noise hazard.
- (10) The FST advises the unit commander of potential hazards within selected sites.

<p>This paragraph implements and/or is in consonance with STANAG 2048.</p>

b. Arthropod and Rodent Control.

- (1) Ensure that practice of proper waste disposal is followed. It is essential for arthropod and rodent control (Section VI) and is in compliance with applicable environmental laws.
- (2) Explain to soldiers the ways in which arthropods may affect their health (Section V) and instruct them in the use of PMM (Section VI).
- (3) Supervise the application of or apply pesticides as required for arthropod control (Section VI). Be sure to follow product label instructions exactly.
- (4) Inspect to ensure the elimination of food and shelter (harborage) for rodents (Section VII).
- (5) Supervise the use of traps and authorized rodenticides as required in the control of rodents (Section VII).
- (6) Report deficiencies to the unit commander.

2-5. Preventive Medicine Measures

Various aspects of PMM are discussed in relation to water supply (Section II), food service sanitation (Section III), waste disposal (Section IV), arthropod control (Section VI), and rodent control (Section VII). Other aspects of PMM are:

a. Personal Hygiene.

(1) The FST can promote personal hygiene of soldiers by arranging for facilities such as handwashing and showering devices, hot water for shaving, and a heated place to dress. Handwashing devices are provided outside latrine enclosures and in the food service area. They may also be set up at other points in the bivouac area. They are constructed so that they operate easily and must be kept filled with water at all times. All washing and showering devices must have a soakage pit underneath them to prevent water from collecting and forming pools.

(2) The team members provide soldiers guidance or instruction as needed concerning the hazards involved when personal hygiene is neglected. They assist the unit commander in inspecting soldiers and their billets to ensure adequate personal hygiene, including body, hair, and teeth; airing sleeping bags; wearing clean clothes (including socks); and disposing of refuse. Moreover, enforcement of sanitary control measures pertaining to all camp facilities encourages soldiers to have more pride in their personal hygiene.

b. Cold Weather. The FST provides guidance as needed in the use of PMM to prevent cold injuries. Hypothermia or frostbite may be prevented by wearing several layers of warm, loosely fitting clothing; by protecting the face from the wind; and by exercising the face, fingers, and toes to keep them warm. Trench foot, which results from prolonged exposure to wet and/or cold conditions when the temperature is between 32° and 50° Fahrenheit (F) (0° and 10° Celsius [C]), may be prevented by the use of protective footwear and dry socks. Snow blindness, which occurs when the sun shines brightly on unbroken ice or snow, can be prevented by wearing sunglasses or an improvised device made of cardboard or cloth and by blackening the areas around the eyes. See FM 21-10 for information on types of cold injuries and their prevention.

c. Toxic Industrial Chemicals/Materials. The FST provides guidance as needed in the use of PMM to prevent injuries from the use of, or near proximity of TIC/TIM. Identify sources; obtain safer chemicals if possible. Ensure soldiers follow cautions/warnings posted in material safety data sheets (MSDS). Enforce PMM (see FM 21-10, FM 8-500, and paragraph 2-62 in this publication).

d. Noise. First, identify possible noise sources. The FST should ensure all unit members are medically fitted for hearing protection and are issued multiple sets. Isolate the noise source by barrier, if possible.

e. Hot Weather. See Section VIII, paragraphs 2-41 through 2-45.

This section implements and/or is in consonance with STANAGs 2136 and 2885 and QSTAG 245.

Section II. WATER SUPPLY

2-6. Importance of Water in the Practice of Sanitation

a. General. Water is essential to the army in the field. Safe water ranks in importance with ammunition and food as a unit of supply in combat and often has an important bearing on the success or

failure of a mission. When in the field, soldiers must be supplied with sufficient potable water to drink and for personal hygiene (such as shaving, brushing teeth, helmet baths, and comfort cleaning). The water for these purposes must be safe for human consumption and should be reasonably free of objectionable tastes, odors, turbidity, and color. For showering, disinfected nonpotable fresh water is to be used. However, only potable water will be used for showering, bathing, or bodily contact in locations—

- (1) Where diseases such as schistosomiasis and leptospirosis are endemic and prevalent.
- (2) Where chemical agents may be present.

b. Water as a Vehicle in Disease Transmission. A primary source of illness to the soldier is waterborne disease organisms. Common waterborne diseases of man are hepatitis, typhoid and paratyphoid fever, bacillary and amoebic dysentery, cholera, common diarrhea, leptospirosis, and schistosomiasis (snail fever).

(1) No direct method has been developed for detecting the minimum infectious quantities of these organisms in water; therefore, it is necessary to resort to an indicator test to determine the bacteriological acceptability of water. The water is tested for the presence of coliform bacteria.

(2) Coliform bacteria are found in great numbers in the excreta (feces) of humans, warm-blooded animals, and in soil. Also, many of the diseases mentioned above are spread through feces.

(3) Although the presence of coliform bacteria in water may not prove fecal contamination, it is an indication that pathogenic (disease-carrying) organisms may be present. The indicator test is the best indicator that contamination exists; therefore, we must assume that pathogens are present.

(4) Many military units in the field do not have the capability for determining the presence of coliform bacteria in water; hence all water must be thoroughly treated and disinfected before use.

c. Quantity of Water Required for Soldiers. The quantity of water required for soldiers varies with the season of the year, the geographical area, and the tactical situation.

(1) In a cold climate, only 2 gallons (7.57 liters) of water per soldier per day may be required for drinking purposes even though they are engaged in physical activity.

(2) In a hot climate, 3 or 4 gallons (11.355 to 15.14 liters) per man per day may be required when they are engaged in only sedentary duty.

(3) Additional amounts of water are required for personal hygiene and cooking. A guide for planning to meet the water requirements in an arid zone is 3 to 6 gallons (11.355 to 22.71 liters) per individual per day unless improvised showering facilities are made available. In this case, the requirement should be increased to 15 gallons (56.775 liters) or more.

NOTE

For additional information on water requirements, see FM 10-52.

Thank You for previewing this eBook

You can read the full version of this eBook in different formats:

- HTML (Free /Available to everyone)
- PDF / TXT (Available to V.I.P. members. Free Standard members can access up to 5 PDF/TXT eBooks per month each month)
- Epub & Mobipocket (Exclusive to V.I.P. members)

To download this full book, simply select the format you desire below

