

Medical Force Protection: Vietnam

Medical Force Protection countermeasures required before, during and after deployment to the “area” are as follows: Significant health risks exist in certain areas of Vietnam related to poor public health sanitation efforts in food, water, and infectious disease control. Consumption of unapproved food or water by U.S. personnel carries high risk of diarrhea.

Major Threats:

Food or Waterborne Diseases: Food and waterborne disease from fecal contamination (diarrhea, Hepatitis A/E, typhoid fever) is the greatest infectious threat to U.S. Personnel. Resistance to common anti-diarrheal antibiotics (TMP/SMX) is reported. Cholera is Endemic countrywide with annual outbreaks.

Drink and eat only food and water approved by U.S. authorities.

Vector-Borne Diseases: Risk of **malaria** is variable, occurring year round and country wide, but excluding urban areas. *P. falciparum* predominates. Malaria is reportedly re-emerging along the Red River plain.

Drug resistant strains occur. Highest risk may be during the rainy season from May to September.

Transmission is higher at this time due to *Anopheles* mosquito vectors breeding in standing water. Year-round. **Dengue fever** is transmitted by the bite of the *Aedes* spp. Mosquito. Incidence is highest during the warmer rainy months (usually April through October in the north and June through December in the south).

Countrywide, risk may be elevated throughout the Red River and Mekong River Deltas, and the coastal district and provincial capitals of central Vietnam. Occurrence reportedly is rare in the remote, mountainous areas. **Japanese Encephalitis** is transmitted through the Bite of an infective mosquito (*Culex tritaeniorhynchus* and other *Culex* spp.); frequently associated with rice-growing areas. Associated with periods of highest vector activity (usually April through October in the north and June through December in the south). In the north, nearly all cases are reported during June and July; in the south, cases are reported year-round, but peak during June and July. Countrywide, risk is elevated in rural and periurban areas, especially where extensive mosquito-breeding sites and pig-rearing areas coexist.

Respiratory Diseases: Tuberculosis is highly endemic. Risk is year-round and countrywide. Incidence likely is increasing, paralleling HIV/AIDS rates. In 1997, “incidence” was estimated at 189 per 100,000 population, and “prevalence” at 289 per 100,000 population. In 1997, resistance was reported to the standard therapeutic agents isoniazid (20 percent), rifampin (3.6 percent), and ethambutol (1.1 percent); 2.3 percent “multi drug” resistance was reported.

Sexually Transmitted Diseases: HIV is endemic at increasing levels. In 1997, HIV seroprevalence among the general population was estimated at 0.22 percent. Maximum seroprevalences reported as of 1997 include up to 69 percent among intravenous drug users, 12 percent among commercial sex workers, and 3.6 percent among STD patients. Highest rates have been reported from the southern provinces. HIV prevalence among military recruits was reported as 0.4 percent in 1999.

Other Diseases of Military Significance: Rabies is highly enzootic and countrywide; 119 human deaths were reported in 1998, including 40 in Hanoi. Dogs are the main enzootic reservoir and source of human exposure. In 1995, 3 percent of blood donors tested positive for syphilis. If qualified personnel are traveling with deploying troops, consider carrying rabies vaccine and immunoglobulin.

Environmental: Surface waters are contaminated with raw sewage. Water and air in urban areas are polluted with industrial contaminants. Extreme heat and flooding occur throughout Vietnam. September through November is flood season, especially in the Mekong Delta. North Vietnam has a subtropical climate, with a hot, humid wet season between May and September. The average temperature is 91F in summer (Apr – Sep) and 61F in the winter (Oct – Mar). The south has a tropical climate with temperatures averaging 90F and a rainy season extending from May – September.

Requirements before Deployment

1. Before Deploying report to Medical to:

- a. Ensure routine immunizations for deployable personnel are up to date: **MMR, Polio, Hepatitis A, Tetanus (Td), Typhoid, Influenza, Yellow fever.**
- b. If you have not been immunized against Hepatitis A (two dose series over 6 months) get an injection of Immunoglobulin with the initial Hepatitis A dose.
- c. Personnel should receive **Japanese encephalitis vaccine.** Every attempt should be made to

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complete the 3 shot series (0, 7, and 30 days) series prior to deployment. A shorter series is available, but may not be as effective.

2. **Malaria Chemoprophylaxis: Begin if exposure anticipated. Recommended regimens follow:**
 - a. **Chloroquine (approved in flight status):** 500mg per week starting 2 weeks before entering risk area. Must continue until 4 weeks after leaving risk area.
 - b. **Mefloquine (Alternative prophylaxis, Non-aviators only):** 250 mg per week starting 2 weeks before entering risk area. Must continue until 4 weeks after leaving risk area.
 - c. **Doxycycline (Alternative Prophylaxis, approved in flight status):** 100 mg per day starting 2 weeks before entering risk area. Must continue until 4 weeks after leaving risk area.
 - d. **Post Exposure Prophylaxis:** The most common type of malaria in Vietnam is Plasmodium falciparum, a non-relapsing form. However, relapsing forms do exist, therefore **Primaquine** should be taken as terminal prophylaxis. The prescribed dose is 15 mg per day starting on the day leaving the risk area and is continued for 14 days. It is taken with either the Mefloquine or Doxycycline regimens noted above. (Alternate dosages of Primaquine are recommended for G-6-PD deficient personnel.)
3. **HIV, PPD (Tuberculin Skin Test), G-6-PD testing** should be up to date.
4. **Obtain Adequate Personal Protective Supplies:** DEET anti-arthropod skin lotion must be issued and used by all personnel. Permethrin treatment is highly recommended for all field uniforms and bednets. Sunscreen, lip balm, and hearing protection should be used as needed.
5. **Complete pre-deployment health assessment (DD Form 2795)*.** Form can be downloaded from the website: http://amsa.army.mil/deploy_surv/Dsurv_Forms.htm

Requirements during Deployment

1. Deploy appropriate Preventive Medicine personnel and equipment.
2. Provide or obtain US-approved source safe food, water, and ice. Avoid local food, water, and ice. Drink only carbonated beverages and avoid drinks with ice. **“Boil it, cook it, peel it, or forget it”.** Never eat undercooked ground beef and poultry, raw eggs, and unpasteurized dairy products.
3. Perform environmental hazard assessments as needed.
4. Operate messing facilities in accordance with service directives. Ensure hand-washing facilities near messing facilities.
5. Operate latrine facilities in accordance with service directives. Ensure hand-washing facilities near latrine facilities.
6. Enforce hand-washing often with soap and water.
7. Ensure proper removal of garbage and solid waste. Eliminate food/waste sources that attract pests to living areas.
8. Enforce chemoprophylaxis. Command supervision necessary to ensure accountability for anti-malarial medications.
9. Enforce personnel protective measures (DEET, Permethrin treated uniforms, Bed nets). Use DEET and other personal protective measures against insects and other arthropod-borne diseases. Personal protective measures include but are not limited to proper wear of uniform and daily “buddy checks” in tick and mite infested areas.
10. Perform vector surveillance and control as needed, particularly during rainy months when mosquito vectors breed.
11. Always use latex condoms to reduce the risk of HIV and other sexually transmitted diseases.
12. Don’t eat or drink dairy products unless you know they have been pasteurized.
13. Don’t share needles with anyone.
14. Avoid contact with animals and hazardous plants.

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15. Avoid contact with lakes, rivers, streams, and other surface water.
16. Conduct DNBI surveillance per CINC and Joint Staff directives.
17. Minimize non-battle injuries by ensuring safety measures are followed. Precautions include hearing and eye protection, enough water consumption, suitable work/rest cycles, stress management and acclimatization to environment.
18. Because motor vehicle crashes are a leading cause of injury among travelers, walk and drive defensively. Avoid travel at night if possible and always use seat belts.

Requirements after Deployment

1. **Complete post-deployment health assessment (DD Form 2796) per CINC or Joint Staff directives***. Form can be downloaded from the website: http://amsa.army.mil/deploy_surv/Dsurv_Forms.htm
2. Supervise and enforce post-exposure malaria chemoprophylaxis if applicable.
3. Receive preventive medicine debriefing after deployment.
4. Seek medical care immediately if ill, especially with fever.
5. Get HIV and PPD testing as required by your medical department or Task Force Surgeon.

* Mail completed original copy of DD 2795 and 2796 to:

Army Medical Surveillance Activity
Building T-20, Room 213 (Attn: Deployment Surveillance)
6900 Georgia Ave, N.W.
Washington D.C. 20307-5001

For more information on pre and post-deployment health assessment forms please contact:

Navy Liaison: LCDR Jeff Brady, MC: (202) 782-0471 (DSN 662)

E-mail: amsa@amsa.army.mil

VIETNAM - VECTOR RISK ASSESSMENT PROFILE (VECTRAP)

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1. GEOGRAPHY:

Vietnam is 332,561 sq. km (128,402-sq mi.), making it slightly larger than New Mexico. It is divided into the five following regions. (1) The Red River drainage area includes the rugged plateaus of the Chinese border to the north, and the Annamite Cordillera to the west. (2) The Annamite Cordillera, an extremely rugged and densely forested mountain range, occupies about two-thirds of the country's land mass and extends from north to south, with peak elevations of 1,500 m (4,900 ft) above sea level. (3) a low-lying, narrow, coastal plain about 1,000 km long connects the Red and Mekong deltas east of the mountains. (4) Estuary of the Mekong River system, which forms the low and marshy delta region dominate the lower third of Vietnam. (5) The country also includes six islands or island groups: Cat-Ba Island in the Gulf of Tonkin, Con-Son Island in the Southeast, Cu-Lao Island in the South China Sea, the Paracel Islands (also claimed by China) in the South China Sea, Phu-Quoc Island in the Gulf Of Thailand (Siam), and the Spratley Islands in the South China Sea. The country has two climates: hot year-round in the south, with a mean temperature of 90° F (32° C). Northern Vietnam is subtropical. May to September is the hot, humid season. October to March is drier and cooler (mean temperature of 61° F (16° C)). Rainfall is 72 inches in the north and 81 inches in the south. Vietnamese is the official language, but French, English, and Khmer are widely spoken in this nation of 77,311,210 people (1999).

2. VECTOR-BORNE DISEASES:

a. **MALARIA:** One of the most serious public health problems in Vietnam. As a general rule, it is found everywhere except major urban centers. Plasmodium falciparum infections account for the majority of cases in the foothills and highlands, while P. vivax infections are responsible for outbreaks found in the Mekong River delta and coastal plains. Transmission occurs throughout the year but the post-monsoon season is the peak malaria transmission period. Areas of highest incidence include: An Khe, Pleiku, Long An, Hau Nghia, Tay Ninh, Binh Duong, Phuoc Long, and Lam Dong. In 1986, malaria was reported in Hoang Lien Son Province (Districts of Ba Yen, Van Ban, Bao Thang, and Tran Yen). In 1988, a malaria epidemic was reported in Son La Province, northwest Vietnam. In 1989 Thanh Linh, Ninh Son, Ninh Phuoc, Tuy Phong, Bac Binh, and Ham Thuan Bac Districts of Vietnam reported the highest malaria carrier rates, and malaria reportedly

spread to the Mekong delta and coastal areas. Malaria was also reported from Lang Son, including the Loc Binh District and Van Lang District, and from Bac Thai Province (Dong Hy District), Gia Lai-Cong Tum, and Dac Lac Provinces. During the first 4 months of 1989, malaria was reported from Son La Province, northwestern Vietnam; the districts most affected were Song Ma, Moc Chau, Thuan Chau, and Quynh Nhai. Approximately 25,600 cases of malaria were reported from Hoang Lien Son Province, Vietnam, during 1989. A survey reported malaria in Ba Be District, Cao Bang Province, Vietnam, in September 1989. In May 1989, up to 30% of some military units operating in the Central Highlands of Vietnam were hospitalized with malaria.

In 1991, 45,000 people were infected in the city of Son La with 18 epidemics and over 300 fatalities; in the Ha Tinh Province 28,600 people were infected including 1,200 acute cases and 140 fatalities; 101 epidemics occurred in Hanoi killing 2,789 and affecting 15,604 others. It is estimated that in the Central Highlands, there are at least 400,000 carriers of malaria. Cerebral (falciparum) malaria appears to dominate in this region. The high incidence was attributed to lack of preventive measures, a scarcity of medications and lack of medical monitoring. The epidemic of 1991 resulted in over 1 million cases, with 4,646 deaths. By 1993, malaria deaths dropped to 1,070 as a new effort for malaria control began in earnest. Urban centers and the northern deltas have very low risk. Chloroquine resistance has been reported from all malarious areas of Vietnam except the delta region in the North. In-vitro chloroquine resistance has been studied in Hue, Sonla (N. Vietnam), Ho Chi Minh City, and Song Be; maximum rate of resistance was found in Hue. Malaria can seriously impair combat readiness.

b. **DENGUE FEVER (DF) AND DENGUE HEMORRHAGIC FEVER (DHF):** Dengue is endemic and has a high annual incidence throughout Vietnam. Transmission is year-round. In 1987, epidemic outbreaks of the disease were reported in at least 22 provinces, including Hanoi and Ho Chi Minh City. The 1987 epidemic hit hardest in the northeast, followed by the central region, the north, and the south, in that order. Provinces with the largest number of cases were Mukdahan, Tak, Nakhon, Phanom, Krabi, Sakon Nakhon, Uthai Thani, Samut Songkhram, Phetchaburi, Phetchabun, and Chanthaburi. In 1988, dengue was reported from many districts in Phu Khanh Province. An outbreak in the central province of Quang Nam-Da Nang occurred in 1993. Dengue incidence in Vietnam tends to be cyclic, usually peaking every four years and 1997 saw another epidemic situation in which 107,000 cases (226 deaths) were reported. 1998 has seen over 70,000 cases as of August. This year is expected to see a ten-fold increase for many provinces especially Quang Tri. DF/DHF can severely impair combat readiness.

c. **CHIKUNGUNYA:** This virus is endemic throughout most of Vietnam. Transmission can occur all year. The disease is found in both rural and urban areas. Intense transmission can occur while remaining focal in nature. This disease is still misclassified and under-reported because of the clinical similarities with DF. Laboratory confirmation is essential to distinguish between the two viral diseases. This disease can severely impair combat readiness.

d. **JAPANESE ENCEPHALITIS (JE):** This virus appears endemic in southern coastal Vietnam. Reported clinical outbreaks are not common. An outbreak occurred in May and June 1992, in the Red River Delta, with 15 fatalities out of 400 cases. The endemicity of JE was higher than expected for this year. This disease is a potentially serious threat to combat readiness.

e. **PLAGUE:** Plague is endemic in the provinces of Dac Lac, Gua-Lai-Cong Tum, Lam Dong, Nghia Binh, Phu Khanh, and Binh Tri Thien. In the first 9 months of 1987, 95 cases and 5 deaths were reported. From 1976-84, the average number of cases was approximately 250. In 1993, 370 cases with 20 deaths were registered in five provinces: Daklao (192 cases, 3 deaths), Gialai (110 cases, 16 deaths), Quang Ngai (38 cases, 1 death), Binh Dinh (25 cases), and Kontum (5

cases) (WER, #7, 17 Feb. 95). Epidemiological information is scant and outbreaks are seldom reported. Transmission appears greatest during August to November. This disease is a potentially serious threat to combat readiness.

f. MITE-BORNE TYPHUS (SCRUB TYPHUS): This rickettsial infection is endemic in most regions where scrub brush and secondary growth vegetation exists. Scrub typhus is common in rural agricultural areas where jungle has recently been cleared, such as rubber plantations or oil palm estates. Although transmission can occur year-round, it is most evident during the rainy seasons. Though time of year and area can be significant factors in determining the risk of infection, risk should be considered high for all susceptible persons in active foci. Once acquired, this disease would severely impair combat readiness.

g. FLEA-BORNE TYPHUS (MURINE TYPHUS): This rickettsial disease is endemic at low levels throughout Vietnam. The disease is present where commensal rodents and people cohabit. It is also found in areas of poor sanitation and hygiene. It is a milder disease than epidemic, louse-borne typhus, and local health authorities do often not recognize clinical disease. Risk of infection is low; however, if acquired, this disease would impair combat readiness.

h. FILARIASIS: Urban and rural strains of Wuchereria bancrofti occur. Old reports indicate that Brugia malayi is endemic in the Red River Delta area of northern Vietnam, and that W. bancrofti is widely distributed in the south, even in Ho Chi Minh City. Endemic W. bancrofti zones include the western and southwestern parts of the Annam Mountains, hilly areas north of Ho Chi Minh City around Loc Ninh and Budop, and east of Ho Chi Minh City at Courtenay. For short-term operations (less than 6 months), the risks to combat troops are considered low. For longer operations, the effect on combat readiness is more difficult to assess.

i. CUTANEOUS LEISHMANIASIS: This disease is endemic to the southern half of Vietnam. Disease prevalence is not known. Risk is low, and the effect upon combat readiness would be minimal.

j. SCHISTOSOMIASIS: Not present.

k. TICK-BORNE DISEASES: Nothing is known about the occurrence of tick-borne typhus, Langat fever, or relapsing fever. These diseases are endemic in the region.

l. OTHERS: Leptospirosis and Rabies are present. Contact NEPMU-6, Pearl Harbor, HI 96860-5040 for additional information.

3. DISEASE VECTOR INFORMATION:

a. MALARIA: There are four main malaria vectors in Vietnam. The importance of each is dependent on location and density.

Anopheles balabacensis (=dirus) is strongly anthropophilic and will bite in or near the jungle, as well as both indoors and outdoors. Adults are shade-loving inhabitants of dense forest and forest fringes but will invade nearby villages at night in search of blood meals. Larval habitats include fresh water shaded pools and seepages, ground depressions, hoof prints, wheel ruts and irrigation ditches.

Anopheles sunaicus is an important vector in the coastal and delta areas of Vietnam. It is strongly anthropophilic and will bite both indoors and outdoors. It has been observed to fly beyond 6 km. Typical breeding sites include brackish water marshes, lagoons, pools and saltwater fishponds.

Anopheles minimus has been a very important vector because of its endophilic and anthropophilic habits. It is a late-night and early-morning biting species common to the foothill areas. Larvae can be found in clear sunlit streams and springs with grassy margins. They can also be found in irrigation ditches and rice paddies where water movement occurs.

Anopheles jeyporiensis is an important vector in some foothill regions. Larvae are generally found in very shallow, moving seepage water at the base of hills and in abandoned rice paddies and isolated pools along mountain streams.

Anopheles sinensis is a very common species and along with An. maculatus and An. aconitus may be important vectors in certain localities. Anopheles subpictus and An. sunaicus are also known to be competent malaria vectors in Vietnam.

b. DENGUE FEVER (DF) AND DENGUE HEMORRHAGIC FEVER (DHF): Aedes aegypti is the primary epidemic urban vector of DF/DHF in Vietnam. Aedes aegypti bites man in the day and early evening, freely entering houses where it may be found resting or actively breeding. Typical breeding sites are indoor receptacles, tires, cans, jars, and various outside containers holding water. Aedes albopictus is of secondary importance for disease transmission. This species can be found breeding in artificial containers holding water, but prefers more natural sites such as tree holes, leaf axils and bamboo stumps. This species has shown resistance to DDT, Malathion and Dieldrin.

c. CHIKUNGUNYA: Vectors are the same as for DF.

d. JAPANESE ENCEPHALITIS: The vectors for JE are Culex tritaeniorhynchus and Culex gelidus. Both have similar breeding habitats and feeding preferences. Adults rarely enter houses and feed primarily on birds and large mammals other than man. Adults are nocturnal with peak biting at dawn and dusk. Larvae have been collected from a variety of sites, including ground pools, hyacinth ponds, foul water pools, rice fields and irrigation canals. On occasion, both species have been collected from artificial containers.

e. CUTANEOUS LEISHMANIASIS: Sand flies (Phlebotomus spp.) vector this protozoan disease. Direct person to person contact of abraded skin (wounds, scratches, etc.) can also be a mode of transmission. Phlebotomus argentipes is the putative vector. Adults rest in the dark areas of human shelters, where humidity remains high. Sand flies are weak fliers, flying close to the ground or moving in short, jerky hops along walls and ceilings. They normally feed at night and in the early morning hours. A variety of animals can serve as natural reservoirs for this disease.

f. MITE-BORNE TYPHUS (SCRUB TYPHUS): Larval trombiculid mites (chiggers) of the genus Leptotrombidium are the vectors. These minute chiggers are ectoparasites of various murid rodents. A painless weal or eschar may develop at the chigger bite before the onset of symptoms. Leptotrombidium deliense is the most common vector found on rodents. Mite activity is greatest during the rainy season (Dec-Mar). Foci of infection can be numerous and cover very small areas where the rickettsia, mites and suitable rodents exist. Areas with alang-alang grass and scrub

habitats afford the best conditions. Other areas of risk include disturbed environments resulting from clearings, reforested areas, overgrown terrain, new settlements and oil palm estates. Rattus rattus diardii and R. exulans are two important reservoirs for this disease.

g. MURINE TYPHUS AND PLAGUE: The Oriental rat flea, Xenopsylla cheopis, transmits both. This flea has shown resistance to DDT and Dieldrin. The human flea, Pulex irritans may be secondarily involved as well. Plague is transmitted via the attempted bite resulting in a regurgitation of the bacillus. Endemic typhus is acquired through infective feces deposited as the flea feeds. The rickettsia must be rubbed into a break in the skin to produce infection. Disease incidence overlaps with the distribution of Rattus rattus spp. and R. norvegicus (Norway rat), the primary reservoirs. Vietnam has reported experiencing serious rat infestations in both urban and rural areas.

h. FILARIASIS: Culex quinquefasciatus (=fatigans) is the principle vector of urban bancroftian filariasis. This species breeds in foul water, cesspools, shallow wells and similar polluted water impoundments. This night-biter has a flight range confined to several hundred meters. It is resistant to Malathion.

Subperiodic Brugia malayi is vectored by Mansonia spp. mosquitoes. These mosquitoes anchor themselves to the submerged stem and root systems of aquatic plants during larval development. Breeding areas are restricted to permanent water systems, i.e., swamps and marshes. Adults are aggressive feeders with biting peaks in early evening and morning hours.

4. DISEASE AND VECTOR CONTROL PROGRAMS:

a. Prevention and Control: The conscientious use of personal protective measures will help to reduce the risk of many vector-borne diseases. Protection from mosquitoes and other biting flies can be accomplished by the use of screened eating and sleeping quarters (insect bar NSN 7210-00-266-9736) and by limiting the amount of outside activity during the evening/night hours whenever possible. If necessary, space spray with d-Phenothrin (NSN 6840-01-412-4634) within quarters.

Personal protective measures should be initiated at sundown in the prevention of malaria, JE and filariasis. Keeping the body covered, such as rolling shirtsleeves down, will deter mosquito biting. The use of DEET 33% lotion (2 oz. tubes: NSN 6840-01-284-3982) or DEET 75% repellent (2 oz. bottles: NSN 6840-00-753-4963) during daylight and evening/night hours is recommended for protection against mosquitoes, sand flies, other biting flies and also against mites and fleas. Additional protection can be achieved through the use of DEET jackets (NSN 8415-01-035-0846 =Sm. 0847 =Med. 0848 =Lrg.) and through the use of 0.5% Permethrin aerosol clothing repellent (NSN 6840-01-278-1336). Chemical control of vectors may be necessary in areas where avoidance is impractical.

The JE vector, Culex tritaeniorhynchus, has shown resistance to a wide variety of insecticides. ULV (ultra low volume) application of suitably registered compounds (Malathion/Chlorpyrifos/Permethrin) will rapidly reduce biting mosquito attacks over wide areas. This is a temporary measure and will need to be repeated every few days if the problem persists. When using pesticides, be sure to always read and follow the label directions.

Avoid tick-infested areas when feasible. Using a buddy system, search total body area every 3-4 hours for attached ticks. Prompt removal of ticks may prevent potential disease transmission.

DEET or Permethrin aerosol spray may be used as a tick and mite repellent when applied to clothing. The blousing of trouser legs will deter tick biting.

For scrub typhus, preventive measures include clearing campsites of non-woody vegetation, spraying with an appropriate acaricide, and use of insect repellent. DEET insect repellent should be applied to socks and around openings in the clothing such as near the waist, groin, neck and wrists. Permethrin aerosol clothing spray should also be considered. NOTE: This spray is applied to trousers and blouse but not to socks, undergarments or covers.

The most important element of a vector control program involving Aedes aegypti and Aedes albopictus is SOURCE REDUCTION. The number of mosquitoes will be greatly reduced by the elimination of all water holding containers in areas close to human habitation. Tin cans, tires, broken pottery, plant vases and similar items must be emptied weekly, be eliminated or stored as to prevent further mosquito breeding. Sand or mortar can be used to fill tree holes and rock holes found near encampments. In areas where it is necessary to store water for drinking, ensure the container has a tight fitting lid or apply Temephos (Abate) larvicide at 1 ppm.

Rodent control should be implemented only after satisfactory flea or mite control has been accomplished.

Controlling body lice best prevents louse-borne disease. Frequent bathing and laundering of clothing will aid in the prevention and/or control of body lice.

Filth fly control should be considered a priority to prevent outbreaks of enteric infections such as shigellosis. Flytek® and/or Apache® fly baits (NSN 6840-01-183-7244) may be considered for use.

Recommended pesticides, by vector group, can be found in Technical Information Memorandum # 24, Contingency Pest Management Pocket Guide, Armed Forces Pest Management Board, Walter Reed Army Medical Center, Washington, D.C. 20307-5001.

Units should contact NEPMU-6 for current chemoprophylactic, additional preventive measures at:

Navy Environmental and Preventive Medicine Unit Six, 1215 North Road, Pearl Harbor, HI
96860-5040

(PLAD: NAVENPVNTMEDU SIX, PEARL HARBOR HI)

Phone: Comm: (808) 471-9505

DSN: 471-9505

Fax: (808) 474-9361, DSN 474-9361

E-Mail: nepmu6@nepmu6.med.navy.mil

Important References:

Contingency Pest Management Pocket Guide-Fourth Edition. Technical Information Memorandum(TIM)24. Available from the Defense Pest Management Information Analysis Center (DPMIAC) (DSN: 295-7479 COMM: (301) 295-7479). Best source for information on vector control equipment, supplies, and use in contingency situations.

Control of Communicable Diseases Manual-Edited by A. S. Benenson. Sixteenth Ed. 1995. Available to government agencies through the Government Printing Office. Published by the American Public Health Association. Excellent source of information on communicable diseases.

Medical Environmental Disease Intelligence and Countermeasures-MEDIC). September 1997. Available on CD-ROM from Armed Forces Medical Intelligence Center, Fort Detrick, Frederick, MD 21702-5004. A comprehensive medical intelligence product that includes portions of the references listed above and a wealth of additional preventive medicine information.

Internet Sites- Additional information regarding the current status of vector-borne diseases in this and other countries may be found by subscribing to various medical information sites on the internet. At the Centers of Disease Control and Prevention home page subscriptions can be made to the Morbidity and Mortality Weekly Report(MMWR)and the Journal of Emerging Infectious Diseases. The address is www.cdc.gov. The World Health Organization Weekly Epidemiology Report (WHO-WER) can be subscribed to at www.who.int/wer. The web site for PROMED is www.promedmail.org:8080/promed/promed.folder.home.

Although PROMED is not peer reviewed, it is timely and contains potentially useful information. The CDC and WHO reports are peer reviewed. Information on venomous arthropods such as scorpions and spiders as well as snakes, fish and other land animals can be found at the International Venom and Toxin Database website at www.uq.edu.au/~ddbfr/. Information on anti-venom sources can also be found at that site. Information on Poisonings, Bites and Envenomization as well as poison control resources can be found at www.invivo.net/bg/poison2.html.