

United States Navy

**SHIPBOARD PEST MANAGEMENT
POCKET GUIDE**



2009

INTRODUCTION

This guide accompanies Navy Shipboard Pest Management training, and it is intended to reduce the need to memorize all that is presented in class. The information in this pocket guide is current as of the date shown on the front and back covers.

More comprehensive information about specific aspects of shipboard pest management and the most current information on approved products for use on Navy vessels can be found in the Shipboard Pest Management Manual, available on the Navy and Marine Corps Public Health Center (NMCPHC) website (www-nehc.med.navy.mil)

If you have any suggestions for improving this pocket guide - or any other aspect of the shipboard program - we invite you to contact the Training Department at NECE, DSN 942-2424, extension 3020 or 3026, or you can contact the department by email at:

nece-training@med.navy.mil

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OVERVIEW

OPNAVINST 6250.4B requires every Navy vessel to have a shipboard pest management program

The ship's CO ensures that personnel responsible for SBPM receive training annually

The ship's CO ensures that only approved pesticides and equipment are stored or used aboard ship

BUMED monitors and evaluates your SBPM program, providing guidance, recommendations, and on-site assistance if needed

BUMED develops and delivers SBPM training

Your POC at BUMED for shipboard issues is your cognizant NEPMU or NECE, Jacksonville (See Appendix B for contact information.)

Once trained and certified, your responsibilities are: 1) Procure approved items, 2) Conduct or supervise pest management operations, 3) Record all pest management activity, and 4) Report pest management info to higher authority

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COCKROACHES 1

Cockroaches infest warm areas where food, water, and hiding places are available.

Inspect likely areas regularly, looking for cast skins, dead or live cockroaches, frass (droppings) or small, dark stains. Spend your time looking in tight, dark places – under machinery, behind lagging, in drains, etc. – and use a flashlight. Use a flushing agent to drive cockroaches out from inaccessible places. Use sticky traps to get an idea of where your problems are and how bad they are.

Look for conducive conditions, too: water leaks, poor sanitation, etc.

Prevent infestation through good sanitation throughout the ship, especially the galley and berthing areas

Control light infestations with sticky traps, bait stations, gel baits, Gentrol Point Source, or an aerosol crack-and-crevice treatment.

Contact NECE or your NEPMU for help with heavier infestations

See next page for approved products.

COCKROACHES 2

**Approved Materials
(NSN nomenclature in Appendix A)**

Flushing agents:

D-Phenotrin
PT 565 Plus XLO®
PT Crack & Crevice I®

Baits

Combat® Quick Kill (small bait station)
Combat® Quick Kill (large bait station)
Siege® Gel Bait
Maxforce® Roach Killer Bait Gel
Avert® Cockroach Bait Station Formula 1

Aerosols (liquid and solid)

Perma-Dust®
PT® 221L
PT® Crack & Crevice I
CB Air Devil HPX®
CB D-Force® HPX ®
Gentrol® Point Source®

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STORED PRODUCTS PESTS

Stored products pests (SPP) are generally found in dried food, especially grains and spices. Pasta, biscuit mix, corn meal, flour, grits, beans, rice, and the like are most frequently infested. Pests are not found in canned goods.

Prevent infestations by careful inspection of goods pierside and while in storage. Inspect stored goods every two weeks, looking for pests in the food itself, in the packaging, or moving around the storage area. Also look for damaged packaging, frass ("grain dust"), or webbing. Uninfested goods in damaged packaging should be repackaged or used immediately. Susceptible stock should be rotated and stored under good sanitation

Goods infested with dermestid or *Tribolium* beetles (i.e., Red or Confused Flour Beetles) must be discarded. We recommend discarding all other infested goods, too, but you may reconstitute items that have fewer than seven pests per pound by freezing the goods and sifting out the dead pests. You may NOT reconstitute goods infested with dermestid or *Tribolium* beetles. Reconstituted goods should be used immediately.

STORED PRODUCTS PESTS 2

If pests are present, cracks and crevices in empty storage lockers can be treated with one of the products listed below. *Never treat food itself.*

Approved Materials (NSN nomenclature in Appendix A)

Flushing agents:

D-Phenothrin

PT 565 Plus XLO®

PT Crack & Crevice I®

Aerosols (liquid and solid)

Perma-Dust®

PT® 221L

PT® Crack & Crevice I

PT 565 Plus XLO®

CB Air Devil HPX®

CB D-Force® HPX ®

Gentrol® Point Source®

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MISCELLANEOUS PESTS

Many insects and other creatures can find their way onto your ship. Most will eventually die, but a few are able to establish themselves on board, resulting in an infestation.

Several common pests are gnats that rely on unsanitary conditions to survive. Fruit flies need old vegetables, fruit or fruit products (jelly, ketchup;) and drain flies need algae, usually found in drains. Others will flourish around mold or fungus. Appropriate sanitation will keep these pests from breeding. An aerosol spray will kill the existing adults.

Biting flies, gnats, and mosquitoes can be kept away with the personal use of repellents (see Appendix A for NSNs.)

Bed bugs live in cracks and crevices, feeding on human blood at night. *They do not spread germs, and sanitation will not affect them.*

“Sun,” steam, or discard mattresses; launder bedding and clothing in HOT water and soap. Treat the entire space (not bedding and not just the infested racks) with a thorough crack-and-crevice application of D-Force HPX.

Contact your NEPMU or NECE for help with these problems, if necessary.

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PEST IDENTIFICATION 1

German Cockroach

Shown actual size. Note "lieutenant's bars" just behind the head. This is an adult. Immatures are smaller, have no wings or bars, but look similar otherwise.



Dermestid Beetle Adult

Small, 1/8 inch or less, *hairy*. Several varieties may infest stored goods. Hard to identify, so check with NECE or your NEPMU if you're not sure. Larvae are easier to recognize (see next)



Dermestid Beetle larva

Small, thick, and *hairy* with distinct rings around the body. No other pest in stored products looks like this. Feeds visibly, outside its food.



PEST IDENTIFICATION 2

Tribolium Adult

Small, reddish, and very plain. The line in the image is $1/25^{\text{th}}$ of an inch (1 mm.) These are the Red and Confused Flour Beetles



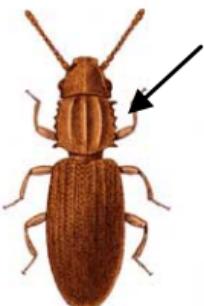
Tribolium Larva

Mealworms. Smooth and shiny, with no hairs and no prolegs of the sort you would see on caterpillars (moth larvae)



Saw-Toothed Grain Beetle

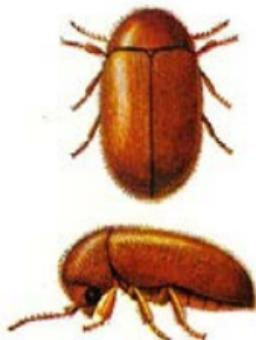
A very common pest. The size of a *Tribolium* (above) and the same color. Note the saw-like edge just behind the head (arrow) and the thin "waist," both not seen in *Tribolium*



PEST IDENTIFICATION 3

Cigarette Beetles

One of several very small, oval beetles that could be confused with dermestids, but *hairless*. Small, fat grubs feed unseen *inside* their food (dermestid larvae feed outside their food and can be seen)



Weevils

Very small. Several similar species. Look for the snout on their face (arrow) to recognize weevils. Grubs feed unseen inside their food



Meal moths

Several species. The most common is illustrated. Any small moth in a food storage area is likely a stored product pest. Look for webbing in or on packaging



PEST IDENTIFICATION 4

Fruit Flies

Tiny gnats, often seen hovering near fruit or fruit products, on which larvae feed. Note the red eyes and the striped tail (use a hand lens)



Drain Flies

Small, squat, *furry* gnats that look like tiny moths. Weak fliers, seldom seen flying unless disturbed. Found near drains or other sources of algae, on which the larvae feed.



Fungus Gnats

A number of small, quick-moving gnats depend on fungus or mold for their livelihood. They tend to run with a jerky motion rather than fly. One common kind is shown here



PEST IDENTIFICATION 5

Bed Bugs

Up to 3/8 inch long and flattened top-to-bottom. Found in cracks and crevices on or near bedding. Young (at top of illustration) look like small adults. All stages are wingless



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RODENTS 1

Prevent infestation through good sanitation, eliminating access to food and fresh water, exclusion (including rat guards,) lighting access points when pierside, and inspecting incoming materials on the pier before lading.

Rat guards should be on all lines that go ashore or into the water. Open end points away from the ship, at least six feet from the pier, and at least two feet from the vessel.

Stuff any openings with non-chewable material. Do not stagger guards on adjacent lines – gang nearby lines into one guard.

Look for rodents and their signs: droppings, odor, rub marks, tracks, urine or hairs (use UV light,) gnaw marks, etc. Set traps if you suspect there is a rodent present (see below.)

Use snap traps with expanded triggers for rats and mice. For rats, which are wary, use the larger trap and place in such a way that the rat has to hit the trap. Try pre-baiting to get your target rat used to the trap. For mice, which are curious, place many traps (small size) in the space where you think the mouse lives. Trap mice without pre-baiting – their curiosity alone usually gets the best of them.

RODENTS 2

If the contents of a package are contaminated with rodent urine or droppings or gnawing, condemn the goods. If only the exterior of a waterproof package is contaminated, sanitize the package *if the cost of sanitizing is seen as less than the cost of the goods*, otherwise condemn the goods. Sanitize with 3 Tbsp household bleach in one gallon water.

Wear gloves when handling rodent-contaminated items (including traps.) Seal condemned goods, even entire pallets, while awaiting disposal. Heavy plastic is a good sealer. Keep these items away from sound goods.

Under international law, your ship can be denied entry into many ports if it is not free of rodents, so be vigilant.

Materials

Rat guard, ship, 38" diameter

Rat guard, ship, 48" diameter

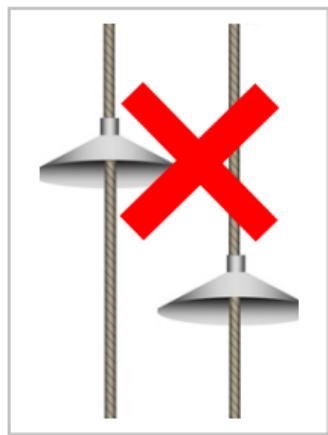
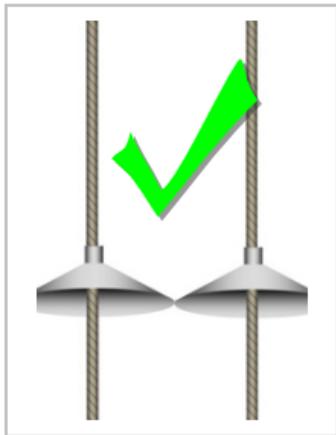
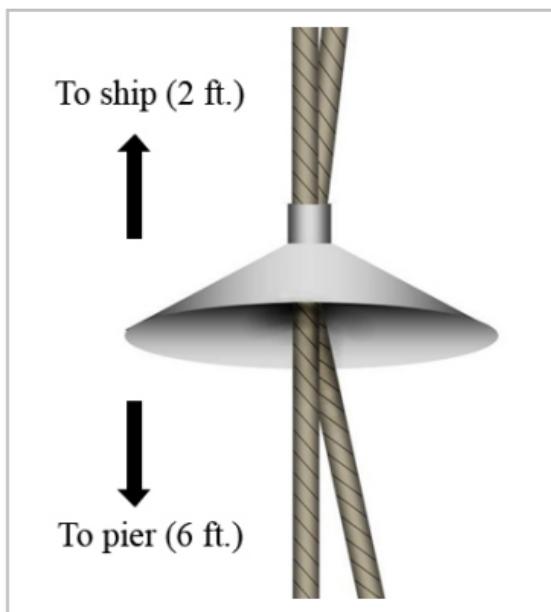
[see next page for placement guidance]

Traps, mouse, 3 or 4 way snap, wood base

Traps, rat, spring, wood base

Trap, glue, rodent

RODENTS 3



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RECORDS AND REPORTING 1

Keep records in two places: 1) the “Environmental” tab in SAMS, and 2) in a separate pest control log (PCL.) The PCL will be the more thorough record. Record any and all activities in detail – who, what, where, when, why, how much, how many, etc. Keep an inventory of equipment and supplies, ordering dates, dates of receipt, certification information, official and unofficial assist visits or consultations, results of any and all inspections that you conduct, etc.

Report your pest management activities monthly on e-DD form 1532-1. To see what any codes in the drop-down menus mean, click the “data” tab at the bottom of the screen. You can type in info that’s not on the menus. See a finished report at the “example” tab

Send completed e-DD1532-1 forms to NECE every month by email attachment to:

nece-1532-1@med.navy.mil

Subject line is your hull number with no dashes or spaces. Do not include correspondence in your message.

RECORDS AND REPORTING 2

Determining the amount of product used :

Air Devil HPX

w/o nozzle	0.10 floz/sec	x sec =
w/ nozzle	0.07 floz/sec	x sec =

Combat (regular)

Combat (large) 1.0 g/sta x sta =

Combat (large) 1.75 g/sta x sta =

D-Force HPX

w/o nozzle	0.10 floz/sec	x sec =
w/ nozzle	0.07 floz/sec	x sec =

d-phenothrin

Gentrol 1.0 g/sec x sec =

Gentrol 0.15 g/dev x dev =

Maxforce FC gel

dime-sized	0.15 g/spot	x spot =
quarter-sized	0.40 g/spot	x spot =

PT Avert stations

PT Avert dry flow 1.5 g/sta x sta =

PT 221 L

w/o nozzle	2.0 g/sec	x sec =
w/ nozzle	1.5 g/sec	x sec =

(continued)

RECORDS AND REPORTING 3

PT 565+XLO

w/o nozzle	2.0 g/sec	x sec =
w/ nozzle	1.5 floz/sec	x sec =

PT Crack & Crev

w/o nozzle	2.0 g/sec	x sec =
w/ nozzle	1.5 floz/sec	x sec =

PT Perma-Dust 2.5 g/sec x sec =

Siege PBS 0.04 g/spot x spot =

(space left empty for future additions)

The bait stations can also be reported as "each," so placing 16 bait stations would be "16" for the amount and "each" for the units of measure.

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PESTICIDES 1

The most current list of pesticides approved for shipboard use is in the digital Shipboard Pest Management Manual on the NMCPHC (formerly NEHC) web site.

Store pesticides in the HAZMAT locker. Mark each item with the date of receipt. Rotate stock (first in – first out.) Dispose of items that reach their expiration date.

The written material on the pesticide container or accompanying the product is called the labeling, and the labeling is federal law. Product labeling is the only legal source of information concerning the use of that product.

Read , understand, interpret, and comply with ALL precautionary statements found in the product labeling. Select your PPE based on these precautionary statements. If you have any questions about proper PPE for a product, contact an industrial hygienist (on board or at your cognizant NEPMU)

See that your SMDR has a copy of all product labeling, since it contains first aid and treatment information.

PESTICIDES 2

Read, understand, interpret, and comply with all guidance in the "Directions for Use" portion of the labeling. Do not use the product unless you understand 1) *how much* should be applied , 2) *how often* you may apply it, and 3) the sites on which you may and may not apply it.

Use careful work practices to avoid leaks, spills, and misapplications.

Dispose of expired or unused pesticide and pesticide containers in compliance with the label and with your local HAZMAT disposal SOP.

NSNs for currently-approved pesticides are in Appendix A.

The on-line SBPM Manual contains charts that tell you which authorized pesticide products may be used against which pests (based on their label information) and other helpful information

We recommend you use the aerosol cans without the added machinery that is available in the stock system

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APPENDIX A 1

Approved Materials List as of January 2009

Insecticide, cockroach bait station, regular size (Combat® Quick Kill); 12 bait stations/box, 12 boxes/pkg; NSN 6840-01-180-0167

Insecticide, cockroach bait station, large size (Combat® Quick Kill); 8 bait stations/box; 12 boxes/pkg; NSN 6840-01-224-1269

Insect repellent, clothing application, aerosol (Permethrin Arthropod Repellent); 12- 6oz. cans/box; NSN 6840-01-278-1336

Insect repellent, personal application (3M, deet) 12- 2 oz. tubes/box; NSN 6840-01-284-3982

Insecticide, Boric Acid, aerosol (Perma-Dust®); 12- 9 oz. Cans/box; NSN 6840-01-287-3938

Insecticide, D-Phenothrin, aerosol; 12-oz can; NSN 6840-01-412-4634

Insecticide, Pyrethrin, aerosol (PT® 565 Plus XLO®); 12- 20 oz. Cans/box; NSN 6840-00-823-7849

Insecticide, Siege® Gel Bait ; 12 reservoirs/box; NSN 6840-01-398-6799

Insecticide, Maxforce® Roach Killer Bait Gel; 4-30 gm reservoirs/box; NSN 6840-01-471-5650

APPENDIX A 2

- Insecticide, Avert® Cockroach Bait Station
Formula 1; 72 stations/bag; 4 bags/box; NSN
6840-01-561-9649
- Insecticide, Avert® Dry Flowable Cockroach Bait
Formula I; 12-30g tubes/box; NSN 6840-01-
561-9766
- Insecticide, PT® 221L Residual Insecticide
aerosol; 12 aerosol containers/box; NSN
6840-01-561-9669
- Insecticide, PT® Crack & Crevice I aerosol; 6
aerosol containers/box; NSN 6840-01-561-
9717
- Insecticide, CB Air Devil HPX® residual with
cypermethrin; 8 aerosol containers/box;
NSN 6840-01-561-9726
- Insecticide, CB D-Force® HPX ®Residual
Insecticide; 8 aerosol containers/box; NSN
6840-01-561-9745
- Insecticide, Gentrol® Point Source®; 20/box;
NSN 6840-01-561-2905
- Brush (small; to transfer insects); NSN 8020-00-
503-0000
- Flashlight; NSN 6230-00-243-6069
- Funnel, polyethylene, 1 quart; NSN 7240-00-
404-9793

APPENDIX A 3

- Funnel, polyethylene, 2 quart; NSN 7240-00-404-9795
- Magnifier (reading glass); NSN 6650-00-252-6250
- Rat guard, ship, 38" diameter; NSN 2040-00-272-2353
- Rat guard, ship, 48" diameter; NSN 2040-00-272-2355
- Traps, mouse, 3 or 4 way snap, wood base; NSN 3740-00-252-3384
- Traps, rat, spring, wood base, 1 doz.; NSN 3740-00-260-1398
- Trap, glue, rodent, box of 24; NSN 3740-01-240-6170
- Traps, cockroach, box of 72; NSN 3740-01-096-1632
- Screens, porthole, 10 inches; NSN 2040-00-371-8031
- Screens, porthole, 12 inches; NSN 2040-00-371-8032
- Screens, porthole, 16 inches; NSN 2040-00-371-8033
- Screw cap vials, 9 ml; NSN 6640-00-408-2200
- Screw cap vials, 3 ml; NSN 6640-00-408-2300

APPENDIX A 4

Sprayer, pesticide, manually carried, Whitmire System III single pack, part number 20-2300, includes pouch for 3 product aerosols and a 10 foot memory coiled hose. Pesticide aerosols must be ordered separately. Cage Code 67184; NSN 3740-01-338-5390

Sprayer, pesticide, manually carried, B&G Aerosol Dispersal Unit; NSN pending
Ultraviolet light; NSN 6530-00-663-2140
Ultraviolet light batteries, two 45-volt; NSN 6135-00-100-0464

Coveralls, disposable; X-Small; NSN 8415-00-601-0792; Small; NSN 8415-00-601-0793; Medium; NSN 8415-00-601-0794; Large; NSN 8415-00-601-0797; X-Large; NSN 8415-00-601-0801

Coveralls; size 36S, NSN 8405-01-057-3482; size 36R, NSN 8405-01-057-3483; size 38S, NSN 8405-01-057-3484; size 38R, NSN 8405-01-057-3485; size 38L, NSN 8405-01-057-3486; size 40S, NSN 8405-01-057-3487; size 40R, NSN 8405-01-057-3488; size 40L, NSN 8405-01-057-3489; size 42S, 8405-01-057-3490; size 42R, NSN 8405-01-057-3491; size 42L, NSN 8405-01-057-3492

APPENDIX A 5

Coveralls; size 44R; NSN 8405-01-057-3494; size 44L, NSN 8405-01-057-5582; size 46S, NSN 8405-01-057-3495; size 46R, NSN 8405-01-057-3496; size 46L, NSN 8405-01-057-3497; size 48R, NSN 8405-01-057-3498

Gloves, protective, Size 7, NSN 8415-01-147-2637; Size 8, NSN 8415-01-147-9540; Size 9, NSN 8415-01-012-9294; Size 10, NSN 8415-01-013-7382; Size 11, NSN 8415-01-013-7384

Respirator, air filtering (3M brand), with pre-filter, Model 5111 – Small, NSN 4240-01-300-9416; Model 5211 – Medium, NSN 4240-01-300-9417; Model 5311 – Large, NSN 4240-01-300-9418; Model 7200S – small/medium, NSN 4240-01-246-5401; Model 7300S – Medium/large, NSN 4240-01-246-5404

Retainer cartridge rings, NSN 4240-01-235-0823

Retainer, filter respirator, NSN 4240-01-246-5414

Respirator, air filtering (Scott brand), Model PN66STC-OVP – Small, NSN 4240-01-250-0751; PN66MTC-OVP – Medium, NSN 4240-01-250-0748

APPENDIX A 6

Respirator, air filtering (Scott brand), Model PN66LTC-OVP – Large, NSN 4240-01-250-0749

Face-piece, gas mask (Pro-Tech), model PN B122 – Small, NSN 4240-01-249-9169; model PN B222 – Medium, NSN 4240-01-249-9170; model PN B322 – Large, NSN 4240-01-249-9171

Respirator, air filtering (Cabot/AO): AO 5-star half-face-piece, Small, NSN 4240-01-251-1574; Medium, NSN 4240-01-251-1577; Large, NSN 4240-01-251-1579

Respirator, air filtering (Cabot/AO): cartridge, NSN 4240-01-245-7233

Respirator, air filtering (Cabot/AO): pre-filter, NSN 4240-01-249-9289

Respirator, air filtering (MSA), Small, NSN 4240-01-150-7937; Medium, NSN 4240-01-022-8501; Large. NSN 4240-01-086-7670

Respirator, air filtering (MSA): cartridge, NSN 4240-01-248-9155

Respirator, air filtering (U.S. safety brand) PM300, Small/medium, NSN 4240-01-250-6521; Medium/large, NSN 4240-01-250-6519

APPENDIX A 7

Respirator, air filtering (U.S. safety brand):
cartridge, NSN 4240-01-247-7229

Face piece, gas mask (North/Norton), rubber,
Small, NSN 4240-01-249-3559; Medium,
NSN 6515-01-231-7194; Large, NSN 4240-
01-220-7617

Respirator, air filtering (Wilson), Model 6111S,
Small, NSN 4240-01-269-4170; Model
6111M, Medium, NSN 4240-01-269-4171;
Model 6111L , Large, NSN 4240-01-269-4172

Respirator, air filtering (Wilson): Pre-filter, NSN
4240-01-249-2577

Respirator, air filtering (Wilson): Pesticide Pre-
filter, NSN 4240-01-268-0567

Goggles, Industrial, NSN 4240-00-190-6432

Helmet, Safety, NSN 8415-00-836-8618

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APPENDIX B 1

Points of Contact

Navy Entomology Center of Excellence

P.O. Box 43 Naval Air Station

Jacksonville, FL 32212-0043

DSN: 942-2424; Com: (904) 542-2424

FAX: (904) 542-4324

PLAD: NAVENTOCTR JACKSONVILLE FL

nece-training@med.navy.mil

Navy Environmental and Preventive Medicine Unit No. 2

1887 Powhatan Street, Naval Station

Norfolk, VA 23511-3394

DSN: 377-6600; Com: (757) 953-6600

FAX: (757) 953-7212

PLAD: NAVENPVNTMEDU TWO NORFOLK VA

Fleet/FMF Support Dept:

Nepmu2norfolk-fleetandfmfsupport@med.navy.mil

Quota requests:

Nepmu2norfolk-educationandtraining@med.navy.mil

Web address:

<http://navymedicine.med.navy.mil/nepmu2/>

APPENDIX B 2

Navy Environmental and Preventive Medicine Unit No. 5

Naval Station, Box 368143, Building 3235
3035 Albacore Alley, Naval Station
San Diego, CA 92136-5199
DSN: 526-7070; Com: (619) 556-7070
FAX: (619) 556-7071
PLAD: NAVENPVNTMEDU FIVE SAN DIEGO CA
Web address: www.nepmu5.med.navy.mil/

Navy Environmental and Preventive Medicine Unit No. 6

385 South Ave. Bldg. 618
Pearl Harbor, HI 96860-4477
DSN: (315) 471-0237; Com: (808) 471-0237
FAX: (808) 471-0157
EMAIL: NEPMU6-Entomology@med.navy.mil
PLAD: NAVENPVNTMEDU SIX PEARL HARBOR
HI

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APPENDIX C

ACRONYMS

AFPMB	Armed Forces Pest Management Board
BUMED	U.S. Navy Bureau of Medicine and Surgery
CO	Commanding Officer
HAZMAT	Hazardous materials
NECE	Navy Entomology Center of Excellence
NEHC	Navy Environmental Health Center
NEPMU	Navy Environmental Preventive Medicine Unit
NMCPHC	Navy and Marine Corps Public Health Center
NSN	National stock number
PCL	Pest control log
POC	Point of contact
PPE	Personal protective equipment
SAMS	Snap automated medical records system
SBPM	Shipboard pest management
SMDR	Senior Medical Department representative
SOP	Standard operating procedure
SPP	Stored products pests

