

REDUCING PESTICIDE EXPOSURE

Care must always be taken to prevent accidental exposure to pesticides even though all registered products are considered safe to use if handled properly.

Properly labeled residual insecticide shall be applied, according to all label directions for each infested site. Pay special attention to cracks, crevices, seams, tufts, folds, and edges. When planning and conducting any treatment, consider the opposite side of any involved wall, floor or ceiling. On-board ship CB D-Force® HPX ®Residual Insecticide (NSN: 6840-01-561-9745), PT 565 (NSN: 6840-00-823-7849) and Gentrol (NSN: 6840-01-318-7416) can be used. CimeXa, a pesticide for bed bugs, once added to the shipboard AMAL to include use on submarines, may be used. **Document applied pesticide on DD Form 1532-1 and e-mail to proper channels.**

If the ship is treated with pesticides by a DoD certified pesticide applicator, it is recommended that you:

- Vacate immediate area during treatment.
- Follow all pesticide label instructions for use and re-entry time.
- Arrange to be out for 4 to 8 hours after the application (24 hours if you have respiratory ailments, allergies or are sensitive to chemicals).
- Air out the site, if feasible, when you return.
- Avoid washing decks and treated surfaces.

SELF-CARE AND TREATMENT

Bed bugs do not transmit blood-borne disease. Some people may develop welts or localized swelling, while others have little or no reaction.

Suggestions for the treatment of bites include:

- Notify medical department that your rack may be infested.
- Resist the urge to scratch. Wash affected areas with antiseptic soap to reduce risk of infection;
- Apply an ice pack frequently to relieve swelling;
- Ointments or lotions can be applied to ease itching.

In rare cases people can have a serious allergic reactions to bed bug bites. Skin irritation, swelling or infection may be due to other medical conditions or insect bites other than bed bugs.

ADDITIONAL INFORMATION

Navy and Marine Corps Public Health Center

620 John Paul Jones Circle, Suite 1100
Portsmouth, VA 23708
(757) 953-0700/DSN 377-0700
www.med.navy.mil/sites/nmcphc/Pages/Home.aspx

Navy Environmental Preventive Medicine Unit 2

1285 West D Street, Norfolk, VA 23511
(757) 953-6600/DSN 377-6600
<https://www.med.navy.mil/sites/nepmu2/NEPMU2-Redesign-2018/SitePages/pest.aspx>

Navy Environmental Preventive Medicine Unit 5

3235 Albacore Alley, San Diego, CA 92136
(619) 556-7070/DSN 526-7070
<https://www.med.navy.mil/sites/nepmu5/Pages/EntoDiv.aspx>

Navy Environmental Preventive Medicine Unit 6

385 South Avenue, Building 618, JBPHH, HI 96860
(808) 471-0237/DSN 471-0237
<https://www.med.navy.mil/sites/nmcphc/nepmu-6/Pages/operational-support.aspx#entomology>

Navy Environmental Preventive Medicine Unit 7

PSC 819 Box 67, FPO AE 09645-0025
011-34-956-82-2230/DSN (314) 727-2230
<https://www.med.navy.mil/sites/nmcphc/nepmu-7/Pages/Education-and-Training.aspx>

Navy Entomology Center of Excellence

Bldg. 953, NAS Jacksonville, 32212
(904) 542-2424/ DSN 942-2424
www.med.navy.mil/sites/nmcphc/nece/administration/Pages/default.aspx#contactus

Armed Forces Pest Management Board

www.acq.osd.mil/eie/afpmb/
Centers for Disease Control and Prevention
<https://www.cdc.gov/parasites/bedbugs/index.html>

Note: If assistance is needed for the control of any pests, contact your nearest Navy Environmental and Preventive Medicine Unit or the Navy Entomology Center of Excellence.



SHIPBOARD GUIDE TO BED BUG CONTROL



Photograph by G. Alpert.

Fig.1. Bed bug taking bloodmeal.

Navy Environmental and Preventive Medicine Unit TWO

1285 West D Street
Norfolk, VA 23511
Comm: (757) 953-6600
DSN: 377-6600

PURPOSE

Information on the control of bed bugs on ships using integrated pest management:

Bed bug infestations have become more prevalent in the U.S. and occur on U.S. Navy ships. When controlling bed bugs it is important to know that quick action is essential, with the goal being complete eradication.

Spread of bed bugs to other areas must be prevented. Re-inspections will be required over several months. Failure to act quickly and effectively can result in having to control populations in additional spaces or even in service member's homes. This pamphlet will provide the ship's crew and medical department with information on:

- 1) Identification of bed bugs;
- 2) Bed bug behavior;
- 3) Surveillance and signs of infestation;
- 4) Management of bed bugs and pesticide safety and applicable regulations;
- 5) Reducing pesticide exposure;
- 6) Self-care for those bitten by bed bugs; and
- 7) Whom to contact for further information.

IDENTIFICATION OF BED BUGS

Bed bugs are small, brownish, flattened insects (4-5 mm long) that feed on the blood of humans, birds, and other mammals.

- Bed bugs are flightless but can crawl quickly over floors, walls, ceilings, and furnishings.
- They can also hitch rides or move around on clothing, furniture, purses, luggage, sea bags, and backpacks.
- Females lay their eggs in secluded areas, depositing up to five a day (200-500 in a lifetime). The eggs are tiny, whitish, and typically about 1mm in size.
- Bed bugs are very resilient. Nymphs can survive months without feeding and the adults for over a year.

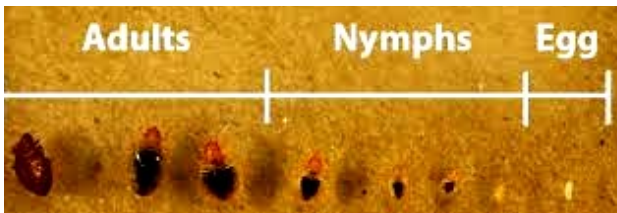


Fig.2 Bed bug egg, nymph and adult.



Fig.3 Bed bug size comparison to a dime.

BED BUG BEHAVIOR

Bed bugs are most active in warm conditions, coming out to feed at night and hiding in cracks and crevices during the day.

- Bed bugs do not have nests like ants or bees but tend to congregate in habitual hiding places.
- Bed bugs prefer to hide close to where they feed, however if necessary, they will crawl more than 100 feet to obtain a blood meal.
- Most infestations start around beds and spread throughout a space and beyond.
- Bed bugs usually bite people at night while they are sleeping.
- The bites can occur on any exposed skin and the symptoms vary with the individual.

SURVEILLANCE

- Blood stains (black/red), cast skins, spots of fecal material can be found on sheets, pillows, mattresses and box springs. (Fig.4)
- Bed bugs seek harborage in tufts, seams, folds of mattresses, bed covers, and cracks and crevices in bed frames and box springs. (Fig.4)
- In heavy infestations they may be found behind baseboards, door casings, moldings, in chairs, loosened wall paper, beneath lagging, and partitions.
- Visual inspections for bed bugs are usually the most effective.
- When an infestation is found it is also important to check adjacent rooms, racks, lockers, drawers for bed bugs.

MANAGEMENT OF BED BUGS

Bed bugs are difficult to deal with and require the combined efforts of the ship's crew. A combination of repeated surveillance, preparation prior to treatment, chemical treatment, and pest proofing is recommended to effectively control bed bugs.

Non-chemical control/inspection includes:

- 1) Launder all clothing and linens suspected of infestation on hot settings. Transport in sealed bags to prevent the spread of bed bugs. Store in sealed bags until chemical treatment is completed.
- 2) Sanitize spaces thoroughly, especially along edges/moldings and within bed frames and drawer. If a vacuum is used, dispose of vacuum bag in a sealed plastic bag and remove from ship immediately.
- 3) Eliminate all clutter. Remove and thoroughly inspect all belongings stored on beds, in lockers and drawers. If free of bed bugs, store in tight fitting containers or bags.
- 4) Steam treatments are effective when manufacturers' instructions are followed concerning operation, maintenance, and safety precautions.
- 5) Pay close attention to any cracks/seams in bed, curtains and cloth straps within bed frame.
- 6) Mattresses and fabric items may be discarded.
- 7) Examine display boards, electrical outlets on walls and any other items/fixtures near beds.

Chemical Control:

- 1) Pesticide applications must be conducted by a **DoD certified pesticide applicator** (IDC/PMT/Entomologist).
- 2) Be prepared for more than one treatment.
- 3) Re-inspection after treatment is **absolutely essential** and should take place 48h post treatment and every 48h thereafter until absence of bed bugs is confirmed. Re-inspection should be conducted every 30 days.

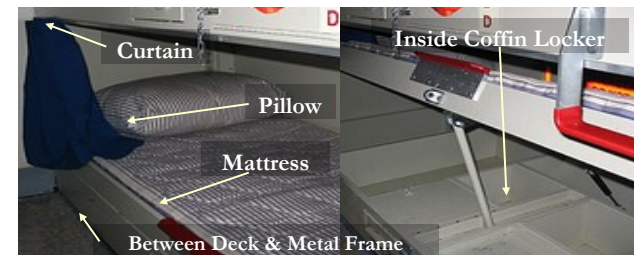


Fig.4 Areas to check during rack inspection.