

ARMED FORCES PEST MANAGEMENT BOARD TECHNICAL GUIDE NO. 24

CONTINGENCY PESTICIDE USAGE GUIDE



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FOREWORD

This is one of a series of Technical Guides (TGs) published by the Strategy and Information Division (SID), Armed Forces Pest Management Board (AFPMB). The AFPMB is a directorate within the Office of the Assistant Secretary of Defense (Sustainment) that recommends policies and procedures, provides guidance, and coordinates the exchange of information related to pest management throughout the Department of Defense (DoD). As a division of the AFPMB, the SID collects, stores, and disseminates published and unpublished information on arthropod vectors and pests, natural resources, and environmental biology important to the DoD. Other SID products include country- or region-specific Disease Vector Ecology Profiles (DVEPs). All TGs and DVEPs are available at the AFPMB website at <http://www.acq.osd.mil/eie/afpmb>. TGs provide technical guidance for the use of the DoD pest management community and others. TGs are part of the overarching DoD approach to integrated pest management, combining principles from each to meet that goal. Therefore each TG should not be considered as standalone guidance and should not be construed or referenced as policy. DoD pest management policies may be found in DoD Directive 4715.1E, "Environment, Safety, and Occupational Health (ESOH)," DoD Instruction 4150.07, "DoD Pest Management Program," other DoD directives and instructions, and implementing component directives/instructions/ regulations. Inquiries, comments or suggestions for improving TGs may be directed to the Chief, SID, at (301) 295-7476 or via e-mail at osd.pentagon.ousdatl.mbx.afpmb@mail.mil.

Disclaimer: This TG does not serve as the official authority for procuring or using pesticides or equipment listed herein. Use of trade names is solely for the purpose of providing specified information and does not imply endorsement of the products named or criticism of similar ones not mentioned. Mention of trade names does not constitute a guarantee or a warranty of the product by the Armed Forces Pest Management Board (AFPMB), the military departments, or the DoD.

TECHNICAL GUIDE 24 SUMMARY SHEET

Document: Technical Guide 24, *Contingency Pesticide Usage Guide*

Description: The purpose of this guide is to provide basic information on using pesticides to control insects that transmit disease and other pests during deployment situations worldwide.

Reasons for Document:

This technical guide is intended to provide guidance on the use of pesticides in support of contingency operations. Guidance includes safety, storage, and usage requirements as well as pesticide recommendations based on the target pest and equipment available. Pesticides on the contingency pesticide list are the only pesticides authorized for use during contingency operations. The most current list can be found here (CAC access required):

- https://extranet.acq.osd.mil/eie/afpmb/cac/standardlists/DOD_CONTINGENCY_PESTICIDES_LIST.pdf

Impact:

- Following the guidance included in this technical guide will prevent accidental adverse environmental and human exposure to pesticides and ensure the use of pesticides at contingency locations are compliant with requirements set forth in DoDI 4150.07, DoD Pest Management Program, 26 December 2019.

Unification Issues

- None

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CHAPTER 1 INTRODUCTION

1-1 PURPOSE AND SCOPE.

The purpose of the Contingency Pesticide Use Guide is to provide basic information on using pesticides to control insects that transmit disease and other pests during deployment situations worldwide. Use pesticides only as part of an integrated pest management (IPM) program. IPM is an approach that combines a variety of pest management methods--including physical, mechanical, educational, biological and chemical--to prevent medical injury or economic damage from pests and disease vectors. The use of pesticides should always be considered a last resort, to be used only after other IPM methods have not been successful or are not practical for the situation and should always be based on surveillance/presence of the pest to help target control efforts. This Guide is not intended to be a substitute for the instructions found on all pesticide labels. Remember, when applying pesticides around U.S. personnel or as part of a U.S. operation, the pesticide label is the law.

This guide is intended to assist DoD service members, civilians and contract personnel in planning for and performing best practices for pesticide applications during contingency operations in the absence of a formalized Theater or an installation/base camp approved IPM Plan. When such a plan exists, that document takes precedence over this technical guide. Commanders who have base operating and support integrator responsibilities serve as the approval authority for IPM plans that support their locations. Enduring locations are required to have IPM plans that are reviewed and updated annually and provide specific pest management guidance tailored to the location. Pest management personnel supporting non-enduring contingency locations should also develop and implement IPM plans for any location that is expected to be occupied for an extended period of time.

1-2 THIS TECHNICAL GUIDE OUTLINES.

- Safety requirements for the use of pesticides.
- Environmental concerns when using pesticides.
- Pesticide procurement, shipping, storage and usage at contingency locations.
- Pesticide usage reporting requirements.

1-3 OBJECTIVES.

This technical guide on usage of pesticides in contingency operations will help to:

- Prevent accidental pesticide exposures.

- Minimize potential adverse environmental impacts.
- Provide information on pesticide selection decisions based on target pest and equipment available.

1-4 GLOSSARY.

Appendix A contains acronyms and abbreviations.

1-5 APPLICABILITY.

This Technical Guide applies to all DoD personnel performing pest management operations.

1-6 REFERENCES.

Appendix B contains a list of references used in this document. The publication date of the code or standard is not included in this document. Unless otherwise specified, the most recent edition of the referenced publication applies.

1-7 AFPMB TECHNICAL GUIDES.

This is one of a series of Technical Guides (TGs) published by the Armed Forces Pest Management Board (AFPMB). The AFPMB is a directorate within the Office of the Secretary of Defense Energy, Installations and Environment that recommends policies and procedures, provides guidance, and coordinates exchange of information related to pest management throughout the Department of Defense (DoD). All TGs are available at the AFPMB website: <https://www.acq.osd.mil/eie/afpmb/technicalguides.html>.

TGs are not policy documents; rather, they provide technical guidance for the use of the DoD pest management community and others. Accordingly, TGs should not be construed or referenced as policy. DoD pest management policies may be found in DoD Directive 4715.1E, "Environment Safety and Occupational Health", DoD Instruction 4150.07, "DoD Pest Management Program," and other DoD directives and instructions, and implementing component directives/instructions/regulations.

Inquiries, comments or suggestions for improving TGs may be directed to the Chief, Strategy and Information Division (SID), at (301) 295-7476 or osd.pentagon.ous-datl.mbx.afpmb@mail.mil.

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CHAPTER 2 PESTICIDE USE DURING CONTINGENCY OPERATIONS

Individuals who apply pesticides during contingency operations, readiness training exercises, and deployments must be certified or under the direct supervision of certified individuals. The use of personal repellents for personal use are exempt from certification requirements. Additionally, individuals providing unit field sanitation team support do not require certification provided they have completed field sanitation team training (see TC 4-25.12 and ATP 4-02.3) and are applying pesticides on the field sanitation team pesticide list (Section I below). Contractors must be certified before starting work. For additional information about certification requirements see DoDI 4150.07 and DoDM 4150.07, Volumes 1 and 2.

2-1 APPLYING AND PURCHASING PESTICIDES IN FOREIGN COUNTRIES.

Different rules concerning the application of pesticides may apply in areas outside the jurisdiction of the Environmental Protection Agency (EPA). As prescribed in DoDM 4715.05 Volumes 1-4, Overseas Environmental Baseline Guidance Document, June 2020, the DoD should follow the Final Governing Standards (FGSs) for installations in each host country. These standards, which include pesticide applications, were developed by comparing an overseas environmental baseline (based on U.S. laws and regulations) with the host nation's standards. For countries without FGSs, or for operations outside a military installation, the DoD policy is to adhere to EPA requirements. For NATO operations, STANAG 2048, *Chemical Methods of Insect and Rodent Control*, provides a list of pesticides approved for use by member nations.

EPA-registered pesticides found on the Contingency Pesticides List will normally be used during military deployment operations. Non-EPA-registered pesticides will not be used in contingency locations without prior written approval of the Contingency Liaison Officer, AFPMB, as outlined in Appendix F, Approval for Local Purchase of Pesticides during Military Deployments.

2-2 CONTROLLING PESTS NOT LISTED ON THE LABEL.

Whenever you are outside the U.S., you may encounter disease vectors not listed on your pesticide labels. Examples are: kissing bugs that transmit Chagas' disease in Central and South America; tsetse flies that transmit sleeping sickness in Africa; and phlebotomine sand flies that transmit leishmaniasis and sand fly fever in many parts of the world. Take the following steps to identify the pesticides to control these vectors:

- Determine from an entomologist or from reference material how and where the insect lives during various stages of its life cycle.
- Determine the life stage(s) most susceptible to lasting control.
- Identify a pesticide labeled for controlling a familiar pest at the same site or location as the insect you want to control.

NOTE: You may apply a pesticide to control pests not listed on the label, if the label allows the pesticide to be used at the same site to control another pest. For

example, during the day, kissing bugs hide in cracks and crevices indoors and within woodpiles outdoors. From experience, you know that cockroaches also inhabit cracks and crevices within dwellings, and spiders take refuge at the same outdoor sites as kissing bugs. Therefore, you can use the labeled treatment methods to apply a pesticide labeled for these familiar pests to control kissing bugs found at the same sites.

When you can't find exactly the same site on a label and have no further guidance, carefully consider the available options, and choose the pesticide labeled for use at the most comparable site against the most similar pest.

2-3 SAFETY REQUIREMENTS AND PERSONAL PROTECTIVE EQUIPMENT.

When working with pesticides and pest management equipment safety is paramount. Regardless of the situation or the location, all safety requirements on the pesticide label must be met. In addition all pest control personnel must follow their Military Service's instructions and regulations regarding safety equipment usage requirements. Most pesticide poisoning incidents occur when experienced people think safety requirements apply only to people with less experience or to situations where there is "more time" and fail to use personal protective equipment. The label precautions are there for a reason – to protect the health of you and those around you. You should always use all required protective equipment. Supervisors should *never* let subordinates apply pesticides without proper protective equipment. Always use and know how to wear your personal protective equipment correctly and follow all directions, restrictions, and warnings for protecting the general population and non-target organisms.

Refer to AFPMB Technical Guide No. 14 Personal Protective Gear and Equipment for Pest Management Personnel for lists of gloves, boots, coveralls, goggles, hearing protection, respirators, and respirator cartridges available for order from the military supply system.

Training on personal protective equipment such as proper fit testing, wear and storage is provided by safety, occupational health, military public health, or other qualified medical authorities. Note that you are responsible for periodic inspection, cleaning, and proper storage of your assigned respirator. When storing a respirator:

- Protect it from dust, sunlight, heat, extreme cold, excessive moisture, and damaging chemicals.
- Ensure the face-piece and exhalation valve is not damaged or subject to cramming or crushing.
- Do not store it in a toolbox or locker unless they are in a container or in a carton.
- Inspect and conduct fit testing (including a positive/negative pressure test):
 - Before each use.
 - Once a month if not used more frequently.
 - Ensure your respirator is properly cleaned after each use.

It is imperative for you to immediately notify your supervisor if you detect a leak in your respirator. Half-face respirators are suitable for most application techniques. Full-face respirators may be required to perform some pesticide applications. Further, pesticide applicators must be placed on a medical surveillance program to test for pesticide absorption and other related pest control medical concerns. It is your responsibility to make these scheduled appointments prior to deployment.

2-4 ENVIRONMENTAL CONCERNS.

2-4.1 Negative Environmental Impacts.

Concern for the environment should be a consideration during contingency operations. The impact of proper and improper pesticide application on the environment may play an important role in current and future host-nation relationships. You should understand that, in addition to potentially negative host nation diplomatic consequences, improper application and use of pesticides could pose a financial liability to the U.S. When applying pesticides, consider the following:

- Impact from drift and runoff to human and non-target animal species (birds, fish, bees, etc), plants.
- Leaching that can negatively affect desired vegetation and contaminate waterways/groundwater.
- Development of pesticide resistance in target organisms.
- Proper disposal of empty pesticide containers and pesticide wastes.

2-4.2 Minimizing Negative Impacts.

To minimize the negative impact of pesticides on the environment:

- Ensure that no non-chemical method exists to mitigate the problem.
- Adhere to label recommendations and restrictions.
- Use only “General” use pesticides, if possible, instead of “Restricted” use.
- Select the pesticide that is least toxic to the environment and most specific for the pest to be controlled.
- Mix only what you need for the daily mission.
- Use precautions while filling up a sprayer. Select a water source that is not a supply line for potable water. If you need to use a potable water source, ensure it has a backflow preventer installed to prevent siphon if the hose accidentally falls into the tank.
- Ensure application equipment is in good condition/operation and properly calibrated. Focus on leaky spray guns, spray nozzles, old worn out parts, etc.
- Use only the amount of pesticide recommended on the label.
- Treat the smallest area needed to control the pest.
- Transport pesticides properly to and from the treatment or focus area.

- Implement all possible precautionary measures to prevent any potential pesticide spill. Report pesticide spills to your chain of command and contain the spill if possible; keeping pesticides from entering storm drains, wells, water systems, streams and rivers. Clean spills immediately in accordance with base or local procedures.

2-4.3 Pesticide Resistance.

To minimize the potential for pests developing resistance to pesticides:

- When possible, implement non-chemical controls FIRST (including sanitation, pest avoidance, use of physical barriers, and pest source reduction) prior to applying pesticides. This does not mean that pesticides cannot be used during the early stages of pest control, but they should not be used in lieu of, or without consideration of other pest management methods.
- Apply pesticides when the pest is most susceptible and/or most likely to come into direct contact with the pesticide.
- Ensure applications are at or above the minimum rates specified on the label.
- Use compatible pesticide mixtures.
- Avoid continuous use of a single pesticide class. Alternate pesticides with differing modes of action.
- Consider what local agricultural pesticides are in use since pests may have developed resistance to the active ingredients in these pesticides.
- If the situation allows, use pesticides that have a short residual life.
- Only use persistent pesticides when absolutely needed.

2-4.4 Disposing of Pesticide Related Wastes.

The proper disposal of pesticides and related waste products is a very important aspect of minimizing the detrimental effects of pesticides on the environment. During exercises and contingency operations in the U.S. or its territories, you must follow DoD and EPA guidance, or state and local requirements, whichever is most stringent, for disposing of pesticides, rinse water, and pesticide containers. AFPMB TG 21 Pesticide Disposal Guide for Pest Control shops has more specific guidance on these procedures.

For operations and exercises outside the EPA's jurisdiction, you must dispose of pesticides, rinse water, and pesticide containers in accordance with the Final Governing Standards (FGSs) or host-tenant agreements for the host country. If FGSs or other agreements do not exist, you must adhere to the EPA requirements or your own Service's regulations. **When there is an inconsistency between regulations, the more stringent requirement will be used.**

When supporting contingencies (such as combat operations in a hostile territory or allied country), you should still adhere to the principles of safe disposal for pesticides, rinse water, and pesticide containers. Even during hostilities, it is important to rinse

spray equipment after use to keep it operational and to reduce the potential hazard of pesticide exposure between uses. Unused pesticides left in a sprayer (even for a day or two) can clog nozzles and deteriorate parts of the equipment so that the sprayer will not operate properly. To minimize the disposal problem, mix only the amount of pesticides that you know you are going to use. It is usually much easier and safer to mix an additional batch than it is to dispose of a full-strength spray left over because you mixed too much. If possible, take enough clean water to rinse the sprayer at the application site. The equipment rinse water can then be applied at the treatment site, or used as a diluent for the next application.

Excess, expired, or recalled pesticides should be turned in to an approved hazardous materials / hazardous waste collection point for proper disposal. Containers with pesticide in any form should never be disposed of in landfills or by burning in the field.

2-4.5 Empty Pesticide Containers.

When disposing of empty pesticide containers, minimize health and environmental hazards by adhering to the following:

- Triple rinse empty pesticide containers and add the rinse water to the sprayer as a diluent.
- Follow the label specific instructions for disposal of empty pesticide containers.
- To prevent troops in the field and local nationals from using empty pesticide containers as cooking pots or water containers, NEVER LEAVE OR BURY USABLE EMPTY PESTICIDE CONTAINERS OR BAGS OF ANY SIZE, IN REUSABLE CONDITION. Crush or punch holes in the sides and bottoms of metal and plastic containers and bury in a landfill or other designated area to prevent their reuse. Most pesticide labels include instructions and precautions for disposing of the container.

2-5 USE OF HERBICIDES OUTSIDE THE UNITED STATES.

2-5.1 Wartime Use.

Executive Order 11850, Renunciation of Certain Uses in War of Chemical Herbicides and Riot Control Agents, 8 April 1975, outlines the U.S. policy on wartime use of herbicides. The United States has renounced first-use of herbicides in war except under regulations applicable to their domestic use on bases or for control of vegetation around the immediate defensive perimeters of bases. **Only the President of the United States may authorize other wartime uses.** Under no circumstances will large area aerial application of herbicides be conducted in a combat theater without approval of the President.

The local Commander's decision to request the use of herbicides during wartime must be carefully considered and should be based on the following requirements:

- Application of herbicides is the safest or most effective way to solve the problem.

- Temporary facilities will not relocate before herbicides will serve their intended purpose.
- Loss of vegetation will not reduce security of present or future operations (e.g., compromise the location of otherwise undetectable positions).
- The desired effect can be achieved with designated contingency herbicides such as Glyphosate (a foliar-absorbed weed killer) whenever possible.

2-5.2 Peacetime Use.

Outside the United States and its territories, use of herbicides by the U.S. military is greatly restricted even during peacetime operations (including exercises). The peacetime use of herbicides within and around U.S. installations is under the authority of the Commander of the applicable unified or specified command. For combat contingencies short of declared war, seek recommendations through legal services prior to taking any action.

2-5.2.1 On-Installation Applications.

Herbicides may be used OCONUS within U.S. bases, posts, or installations for control of vegetation. [NOTE: Bases and posts are included in the term *installations*. The U.S.-controlled portions of foreign installations are considered U.S. installations.] During OCONUS exercises, you may apply herbicides within existing U.S. installations to the extent that application is already authorized in the installation's current IPM Plan. Coordination with and permission of the installation Commander or designated representative is required prior to using herbicides.

2-5.2.2 Off-Installation Applications.

Off-base uses of herbicides (including applications to the area immediately outside perimeters of U.S. installations) during peacetime/exercises must be in accordance with the FGS or with host-tenant agreements for the host country. Off-base permanent facilities on loan to U.S. forces during exercises, and temporary areas in the field (e.g., temporary aircraft landing strips or field support areas set up in tents) are **not** considered U.S. installations, so peacetime use of herbicides in these areas must be in accordance with the FGS or host-tenant agreement of the host country.

2-5.2.2 Informing the Chain of Command.

Field Commanders who desire to use herbicides may not be aware of all the restrictions. Before responding to an herbicide mission, ensure the chain of command is informed about the requirements and levels of authority for various herbicide uses as given in this section. The sources of this guidance are: Executive Order 11850, Renunciation of Certain Uses in War of Chemical Herbicides and Riot Control Agents, dated 8 April 1975; and Annex F to the current Joint Strategic Capabilities Plan, which provides implementing guidance from the Joint Chiefs of Staff to the Service components. Each Service may have supplementing regulations addressing the subject.

2-5.2.3 Segregate Equipment used to apply Herbicides from those used to apply Insecticides.

Avoid using the same equipment for dispersing both herbicides and insecticides. If you have a frequently recurring need for applying herbicides, it is better to designate specific sprayers for this purpose, and not use them for anything else. Extremely small amounts of certain herbicides (i.e. glyphosate) have a detrimental effect on most plants. It would be counterproductive to apply an insecticide for tick control around a defensive perimeter, only to discover a few days later that herbicide residues left in the sprayer defoliated or discolored the vegetation that camouflaged the fighting positions. The corrosive nature of herbicides further underscores the great importance of cleaning your spray equipment thoroughly after each herbicide mission. NOTE: This can be hard to do since funding for procurement of multiple sprayers can be an issue, as well as the need for additional storage and maintenance requirements. There are neutralizers that can be added to the tank before using it again that prevents cross-contamination. BASF makes one called "Neutralize". Be particularly careful when disposing of rinse water to prevent unwanted effects as described above.

2-6 RECORDING, REPORTING, AND ARCHIVING PESTICIDE USE DURING CONTINGENCY OPERATIONS.

DoD Instruction 4150.07, DoD Pest Management Program, December 26, 2019, Section 2.10.f states that the DoD Component heads will record and permanently archive all pesticide applications, except skin and clothing repellents, at all contingency locations in accordance with DoDI 4715.22 and enduring locations in accordance with DoDI 5015.02 and guidance published by the Director, AFPMB. Reporting pesticide use and archiving pesticide use records shall be accomplished in accordance with Military Service procedures.

2-6.1 Army Component Procedures.

Reference: Para 2-27.j. p.(18), AR 40-5, Medical Services, Army Public Health Program, 12 May 2020. Record and report all pesticide applications, except arthropod skin and clothing repellent applications, according to the guidance in DA Pam 40-11. Reference: Para 10-12.p (69), DA PAM 40-11, Medical Services, Army Public Health Program, 18 May 2020.

Active and Reserve Component PH personnel, operational preventive medicine units, logistics civil augmentation programs, Field Sanitation Teams, pest management contractors, or other contracted personnel conducting pest management activities during combat or contingency operations must record all pesticide applications (except insect repellents for skin and clothing) and nonchemical pest management activities.

Daily pesticide application records are reported on DD Form 1532–1 in accordance with DODI 6490.03, DODI 4150.07, and ATP 4–02.8. DD Form 1532–1 is available as an Excel® spreadsheet on the AFPMB website here:

<https://www.acq.osd.mil/eie/afpmb/docs/standardlists/dd1532-1.xlsm> to document pest control activities.

All reports are consolidated by the supporting Brigade Combat Team (BCT) environmental science and engineering officer (if not part of a BCT, forward reports to the supporting MED DET (PM) or Logistics Civil Augmentation Program vector control manager) and emailed monthly to the APHC at usarmy.apq.medcom-aphc.mbx.pesticide-archival@mail.mil for archiving. Be sure to copy the deployment pest management consultant for the Component Command where the application was made for their awareness. The APHC will archive these pesticide application records in DOEHRS-IH. In addition, the deployment pest management data that APHC receives is also uploaded to the 1532 summary dashboard located on the Defense Health Agency's CarePoint Information Portal at the following website: https://carepoint.health.mil/sites/ENTO/Pages/AFPMB_1532.aspx. As long as you have a Common Access Card (CAC) and an internet connection you will be able to log on to this site. It is highly encouraged that deployed pest management personnel visit this dashboard as it is updated frequently and can be a helpful tool for monitoring pesticide usage, types of pests being managed, time spent performing certain pest management activities, and can help in planning future statement of work needs.

Report all pesticides applied in CONUS during readiness training and exercises to the local installation Integrated Pest Management Coordinator for inclusion in the monthly installation pest management report.

2-6.2 Navy Component Procedures.

Reference: OPNAVINST 6250.4c Navy Pest Management Programs, 11 April 2012, COMNAVSURFPAC/COMNAVSURFLANT INSTRUCTION 6000.1, 6 March 2014, and COMSUBLANT/COMSUBPACINST 6000.2E, 25 August 2016.

Active and Reserve Component Medical Department Personnel, and contractors, who apply pesticides during military operations ashore and afloat will record pesticide use on DD Form 1532-1 and/or Naval Shipboard Non-Tactical ADP Program (SNAP) Automated Medical System (SAMS) in the event a DoD Form 1532 cannot be submitted due to shipboard operational posture. Each month, pesticide use records, generated by **ground forces** Medical Department personnel and contractors, as well as any **shipboard** applications, will be consolidated by the Commander, Commanding Officer, Officer in Charge, or Master of Military Sealift Command ships and forwarded to the Navy and Marine Corps Public Health Center (NMCPHC) email inbox: usn.hampton-roads.navmcpubhlthcenpors.list.nmcphc-pesticiderpts@mail.mil

NMCPHC will forward contingency pest management records to the Army Public Health Center in accordance with DODI 6490.03, Deployment Health, for permanent archiving in the Defense Occupational and Environmental Health Readiness System (DOEHRS). Major claimants are free to determine whether or not local reporting and archiving is necessary.

2-6.3 Air Force Component Procedures.

Reference: AFMAN 32-1053, Integrated Pest Management Program, 6 August 2019.

DoD pesticide applicators and contract pesticide applicators shall record pesticide use. Each month, pesticide use records (DD Form 1532, DD Form 3044, Pest Management Report, or IPMIS report) will be sent to the supporting MAJCOM Pest Management Professional (PMP). After a review (not to exceed one month), the MAJCOM PMP will route a copy of these records to HQ AFCEA/CEOA, 139 Barnes Dr., Suite 1, Tyndall AFB 32403-5319 who will forward contingency pest management records to the Army Public Health Center in accordance with DODI 6490.03, Deployment Health, for permanent archiving in the Defense Occupational and Environmental Health Readiness System (DOEHRS).

2-6.4 Navy or Air Force Component under Army Command as part of a Land Component Command Operation Procedures.

Navy and Air Force personnel that are assigned to land-based Land Component Command (Army) organizations should follow procedures as identified for the Army Component. Examples of such situations include Navy and Air Force personnel assigned to Provincial Reconstruction Teams, Embedded Training Teams, Military Training Teams, and as an Individual Augmentee.

2-7 FIELD SANITATION TEAMS.

Each Company level Army unit should have a Field Sanitation Team (FST) that can provide limited pesticide application in support of Company level sanitation efforts. FST personnel must have successfully completed the FST training course and are only permitted to apply pesticides found on the FST pesticide list (Tables F-H). Equipment authorized for FST use with these pesticides can be found in table I. Field Sanitation Team pesticide use does not replace individual and unit level prevention measures.

Good individual and unit level hygiene/sanitation practices goes a long way to eliminate pest problems. The use of pesticides should only be implemented when personal and unit level prevention measures prove inadequate for controlling the targeted pests.

2-7 PREVENTIVE MEDICINE REPRESENTATIVE.

Preventive Medicine Representatives (PMRs) are employed at a Marine Corps battalion, company, or platoon level in order to fulfill Preventive Medicine tasks as required by applicable instructions in the absence of a Preventive Medicine Technician in garrison and operational environments. Each PMR representative must complete the Preventive Medicine Representative course and is not authorized to apply insecticides unless trained in accordance with DoDM 4150.07 V1. The Marine Corps Allowable Medical Authorization List (AMAL) 637 includes personal protective repellants and pest control equipment to provide surveillance and physical control of pests.

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CHAPTER 3 CONTINGENCY PESTICIDES

The pesticides found on the contingency pesticide list are suitable for contingency use by one or more of the Military Services. The most current list and prices for the products listed in this Technical Guide are available from the AFPMB Contingency Pesticide List posted to the AFPMB website here:

https://extranet.acq.osd.mil/eie/afpmb/cac/standardlists/DOD_CONTINGENCY_PESTICIDES_LIST.pdf

Refer to AF Joint Manual 24-204/TM 38-250/NAVSUP 505/MCO P4030.19G/DLAI 4145.3 [https://static.e-publishing.af.mil/production/1/af_a4/publication/afman24-204/afman24-204.pdf], *Preparing Hazardous Materials for Military Air Shipments*, 13 July 2017, for additional guidance on air transportation of pesticides. The International Air Transportation Association's "Shippers Declaration for Dangerous Goods" form must be used for air transport of pesticides that are regulated. Service Focal Points jointly establish policy and implement the manual. In accordance with paragraph 1.2.2 of the Joint manual, users should contact their Service Focal Points for all clarification and waivers:

Army. U.S. Army Safety Center/CSSC-PP, Fort Rucker, AL 36362-5356 Phone (205) 255-3553 DSN 588-3553.

Navy. Commander, Naval Supply Systems Command, Code 4122D, 1931 Jefferson Davis Highway, Arlington, VA 22241-5360, Phone (703) 607-1088 DSN: 327-1088. Navy Activities get waivers from Navy Ships Parts Control Center, Code 0541, P.O. Box 2020, Mechanicsburg, PA 17055-0788, Phone (717) 790-2784, DSN 430-2784.

Air Force. HQ AFMC/LGTP, 5215 Thurlow St., Wright-Patterson AFB, OH 45433-5540 Phone (513) 257-4503 DSN 787-4503.

Marine Corps. Commander of Marine Corps (LPP-2), Headquarters, U.S. Marine Corps, 2 Navy Annex, Washington, DC 20389-1775, Phone (703) 696-1061, DSN 226-1061.

Defense Logistics Agency. DLA/MMLSD, 8725 John J. Kingman Road, Suite 253, Ft Belvoir, VA 22060-6219. Phone (703) 767-3673, DSN 427-3673.

3-1 EMERGENCY PROCUREMENT OF CONTINGENCY PESTICIDES AND PEST MANAGEMENT EQUIPMENT.

3-1.1 Emergency Procurement of Insect Repellents, Pesticides and Equipment.

Deploying forces often need pesticides and equipment on short notice. The Defense Logistics Agency (DLA) has established an Emergency Supply Operations Center (ESOC) to provide equipment and supplies to deploying forces with urgent requirements in a timely manner.

For insect repellents, pesticides, pesticide application equipment, and personal protection equipment (bed nets, head nets, *etc.*) and respirators:

Contact the DLA Customer Interaction Center DLA Contact Center at Tel: 1-877-352-2255 or DSN: 661-7766. They are open 24/7 365 days a year for all customer inquiries and submittal of requisitions. Email and related info is listed below:

 Email Address: DLAContactCenter@dla.mil
 Phone: 1-877-352-2255
 Phone: 269-961-7766
 DSN: 661-7766
 Fax: 269-961-7791
 DSN Fax: 661-7791

For technical/quality/logistical/ordering inquires/questions: contact the DLA Chemist at (804) 279-3995, DSN: 695-3995; cell 1-804-201-3682. Normal business hours are 0800-1700 hours weekdays EST. After normal duty hours, please call the cell phone number.

3-2 SHIPPING PAPERS, MARKING AND LABEL REQUIREMENTS.

Shipping papers are required for all hazardous materials in transit. These papers should be within reach of transport drivers/operators at all times. Information contained on the shipping papers includes: proper shipping name, hazard class, UN identification number, reportable quantity (RQ) if applicable, and package quantities or weight.

Marking regulations require information on the specific hazardous material to be visible or “marked” on the outside of the package. Information required to be marked on the packages includes: proper shipping name, UN identification number, and consignor’s or consignee’s name.

Department of Transportation (DOT) labels must be attached to the outside of packages near the proper shipping name, providing information on the specific hazard class of the material (i.e., FLAMMABLE LIQUID) if applicable.

Note: The shipping information listed above is believed to be current, accurate and reliable, but may be incomplete due to revisions and/or not applicable to all conditions or situations that may exist or occur. Users must verify the suitability of this shipping information prior to use.

3-3 AIR-TRANSPORTABLE OVER-PACK CONTAINERS.

Some pesticides come in containers that do not meet air transport requirements. Further, containers that have been opened do not qualify for air shipment.

Pesticides stored in reusable over-pack containers (cylindrical metal drums with re-sealable metal tops) may be transported by air as follows:

- One-gallon rectangular cans (nominally 10 in. x 6 in. x 4 in. may be over-packed in the following container: DRUM, SHIPPING AND STORAGE, (12.9 in. ht. x 10.5 in. diameter) NSN 8110-00-254-5722, U/I – EA, Unit Price – about \$76.
- A standard five-gallon drum (nominally 13.8 in. ht. x 10.9 in. diameter) may be over-packed in the following container: DRUM, SHIPPING AND STORAGE (19.9 in. ht. x 15.4 in. diameter) NSN 8110-00-254-5716, U/I – EA, Unit Price – about \$50.

Transportation regulations also require that the pesticide container inside the over-pack drum be cushioned with vermiculite or other absorbent material on the sides, top and bottom. Refer to Para A.20.1, AFJMAN 24-204/TM 38-250/NAVSUP PUB 505/MCO P4030-19G/DLAI 4145.3, Attachment 20.

Personnel requiring assistance with cushioning material should contact the Air Force Packaging Technology and Engineering Facility, 5215 Thurlow Street, Wright Patterson AFB, OH, 45433-5440, (937) 257-4234/4519 or DSN 787-4234/4519. A suitable cushioning material is:

Cushioning Material, Industrial; Untreated (VERMICULITE, ASTM C 516, Type I, grade 3), BAG, 4.5 lb, NSN 8135-01-324-2664; specify Part No A-A-52450 and Cage 58536. Cushioning material is 4.5 to 7 lbs. per cubic ft, density, suitable for packing hazardous chemicals or liquids. One bag of this material is adequate for over-packing three standard 5-gallon drums, each in the larger over-pack container, above. Approximately 7 one-gallon cans may be over-packed, each in the smaller container, with the material in one bag.

3-4 CONTINGENCY PESTICIDE STORAGE GUIDANCE.

Pesticide storage areas should be segregated from all other areas for reasons of health and safety, fire protection, environmental protection, and security. For example, if a fire occurs in a facility located within or adjacent to an office complex, extensive decontamination of nearby areas from drift of toxic vapors, smoke, liquids, and particulates is required.

Designated pesticide storage areas are essential to safely protect and store pesticides and related chemicals. Storage space may also be combined with, or accommodated in, the pesticide application vehicle and equipment space.

- Storage areas shall be secured from unauthorized entry and be located in a secured area with minimum external access for non-Vector Control personnel.
- Pesticide storage facilities will be hard stand buildings, MILVAN or other structures that are capable of being secured.

- Pesticides shall be stored in a dry room or building where temperatures can be maintained between 50° and 100° Fahrenheit.
- Always store pesticides in their original containers.
- Pesticides will not be stored in a room with a floor drain of any type.
- When no floor containment is available, all liquid pesticides will be placed on spill containment platforms capable of containing 110% of the spill. If commercial spill containment is not available, field expedient containment can be made using wooden frames and old water bladders.
- Non-absorptive shelving will be used to store pesticides if available. If wooden shelves are used, the wood is to be turned in as HAZMAT when it is no longer needed.
- There will be separate storage rooms or buildings for insecticides and herbicides, rodenticides and fly baits, and animal traps. If outdoor space is provided for pesticide storage the space shall be secure, have overhead cover and protected from the elements. Animal traps may be stored in outside facilities.
- Herbicides and insecticides will be stored in separate rooms when possible. When this is not feasible, the pesticides shall be arranged so that clean air flows continuously from the insecticides past the herbicides and out of the facility. This is due to the potential for contamination of the insecticides with herbicides.
- All storage facilities will be labeled on all sides with signs such as “DANGER,” “POISON,” and “PESTICIDE STORAGE AREA” to advise personnel of the contents and warn of their hazardous nature. If flammable liquids are stored then a “FLAMMABLE PESTICIDES” sign needs to be present. NO SMOKING signs should be located in the pesticide areas.
- A list and SDSs of the types of materials stored shall be posted on the outside of the storage area and a copy should be given to the installation on-scene hazardous waste coordinator and the fire department serving the base camp.

Every effort should be made to transition temporary pesticide storage facilities to more suitable portable or semi-permanent facilities when contingency operations exceed 1-year.

3-5 PEST MANAGEMENT VEHICLES.

Vehicles used to transport pesticides should be exclusively dedicated for this purpose and clearly identified as vector control vehicles. If vehicles cannot be designated as vector control vehicles, then vehicles used to transport pesticides will NOT be used to transport food, water, or medical supplies. Vehicles will be maintained with a clean and orderly appearance, free from observable pesticide spills, or residues.

Only pest management personnel are authorized to use vehicles that are contaminated with pesticides.

Vehicles used to transport pesticides will be equipped with a fire extinguisher and a spill kit capable of handling the maximum amount of pesticide transported at any given time.

All pesticides carried on vehicles will be secured in locked compartments at all times. Compartments will be lockable and composed of non-absorbable material.

Vehicles will not be left unattended at any time unless they are locked and secured.

For all pesticides carried in a vehicle, the corresponding Safety Data Sheets will be maintained in the vehicle.

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CHAPTER 4 PESTICIDE RECOMMENDATIONS

Pesticide recommendations in this section are for use as a quick reference only, to help you identify and narrow down your options from the contingency pesticides in Section II. Read the actual labels of the pesticides you are considering before making a final decision on which one to use. Be sure to determine if the particular site the pesticide is intended to be used at is listed on the product label. A specific pesticide may be provided to the military by more than one manufacturer, so label information may vary somewhat among products with the same NSN.

Pesticides are listed in a similar order as they appear on the Contingency Pesticide List, NOT in order of preference. Most of the individual pesticides have several uses and are therefore listed under several pest groups. The pesticides are diluted with water, unless otherwise stated.

Pesticides on the contingency pesticide list are the only pesticides authorized for use during contingency operations. The most current list can be found here (CAC access required):

https://extranet.acq.osd.mil/eie/afpmb/cac/standardlists/DOD_CONTINGENCY_PESTICIDES_LIST.pdf

Mineral oil is an acceptable line cleaning agent/diluent for use with the following pyrethroid ULV products listed in this guide:

- 3% Pyrethrins, NSN 6840-01-104-0780
- Resmethrin, NSN 6840-01-359-8533

The following mineral oil products are available through the federal supply system: 1 pint can: NSN 6505-00-664-0441, 1 gallon can: NSN 9150-01-522-3094, 5 gallon can: NSN 9150-01-522-3089.

Additional information on the use of repellents and their application can be found in AFPMB Technical Guide No. 36 on Personal Protective Measures Against Insects and Other Arthropods of Military Significance.

Table 1 Repellents on the contingency pesticide list and pests they are labeled to provide protection against

	Labeled to provide protection against bites from													
	Mosquitoes	Ticks	Chiggers	Biting Flies	Gnats	Fleas	Sand Flies	Stable Flies	Black Flies	Deer Flies	No-See-Ums	Human Body Lice	For use on Clothing?	For use on Exposed Skin?
Trade Name, NSN, Active Ingredients														
Insect/Arthropod Repellent Fabric Treatment, 6840-01-334-2666, Permethrin 40%	Yes	Yes	Yes									Yes	Yes	
Sawyer Insect Repellent Aerosol, 6840-01-278-1336, Permethrin 0.5%	Yes	Yes	Yes										Yes	
IDA Kit, 6840-01-345-0237, Permethrin 40%	Yes	Yes	Yes									Yes	Yes	
Ultrathon, 6840-01-284-3982, DEET 34.34%	Yes	Yes	Yes	Yes	Yes	Yes				Yes				Yes
Natrapel, 6840-01-619-4795, Picaridin 20%	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes					Yes
Ultra 30 Insect Repellent Lotion, 6840-01-584-8393, DEET 30%	Yes	Yes	Yes	Yes		Yes	Yes							Yes
Cutter Backwoods Insect Repellent Pump Spray, 6840-01-584-8598, DEET 25%	Yes	Yes	Yes	Yes	Yes	Yes					Yes			Yes
Bullseye Bug Repellent, 6840-01-656-7707, IR3535 20%	Yes	Yes												Yes

Table 2 Insecticides and acaricides on contingency pesticide list and pests they are labeled to control

Trade Name, NSN, Active Ingredients	Is the product labeled to control this pest?														
	Mosquito Adults	Mosquito Larvae	Mosquito Pupae	Sandflies	Black Flies/Midges	Flies	Ants	Bees	Wasps	Bed Bugs	Cockroaches	Fleas	Chiggers/Mites	Ticks	Termites
VectoBac GR, 6840-01-565-8243, Bacillus thuringiensis subspecies israelensis strain AM 65-52 2.8%	Yes														
Talstar P Professional, 6840-01-525-6888, Bifenthrin 7.9%	Yes				Yes	Yes			Yes	Yes		Yes	Yes	Yes	Yes
Tempo Ultra WSP, 6840-01-383-6251, Beta-Cyfluthrin 10%	Yes				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Demon WP, 6840-01-390-4823, Cypermethrin 40%	Yes				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
DeltaDust, 6840-01-431-3345, Deltamethrin 0.05%							Yes	Yes		Yes	Yes		Yes	Yes	Yes
Kills Bedbugs II, 6840-01-573-5024, Deltamethrin 0.03%										Yes		Yes		Yes	
Zenivex E20, 6840-01-573-4964, Etofenprox 20%	Yes				Yes	Yes									
Zenprox Aerosol, 6840-01-619-6396, Etofenprox 1.0%, Pyrethrins 0.15%, Tetramethrin 0.5% and Piperonyl Butoxide 1.5%							Yes			Yes	Yes	Yes		Yes	
Gentrol Aerosol, 6840-01-585-9976, (S)-Hydroprene 0.36%										Yes	Yes				Yes
Altosid XR Extended Residual Briquets, 6840-01-424-2495, (S)-Methoprene 2.1%	Yes														
Altosid Liquid Larvicide Concentrate, 6840-01-424-2493, (S)-Methoprene 20%	Yes														
Dibrom Concentrate, 6840-01-270-9765, Naled 87.4%	Yes				Yes	Yes									
Trumpet EC, 6840-01-532-5414, Naled 78%	Yes				Yes										
Kontrol 4-4, 6840-01-550-5660, Permethrin 4.6%, Piperonyl Butoxide	Yes				Yes	Yes									
Anvil 10+10 ULV, 6840-01-474-7751, Sumithrin 10%, Piperonyl Butoxide 10%	Yes				Yes										
Pyronyl UL-300 Oil Concentrate, 6840-01-104-0780, Pyrethrins 3% with Synergists	Yes					Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Scourge, 6840-01-359-8533, Resmethrin 4.14%, Piperonyl Butoxide 12.42%	Yes				Yes	Yes									
Fyfanon ULV Mosquito Insecticide, 6840-01-169-1842, Malathion 96.5%	Yes														
Termidor 80 WG, 6840-01-483-3072, Fipronil 80%							Yes	Yes	Yes		Yes			Yes	Yes
Summit B.t.i. Briquets, 6840-01-377-7049, Bacillus thuringiensis 10.31%	Yes														

Maxforce Granular Fly Bait, 6840-01-518-5807, Imidacloprid 0.5%, (Z)-9-Tricosene 0.1%						Yes																
Golden Malrin, 6840-01-667-4358, Methomyl 1%, (Z)-9-Tricosene 0.049%						Yes																
Maxforce FC Roach Killer Bait Gel, 6840-01-483-3065, Fipronil 0.01%											Yes											
Maxforce FC Roach Killer Bait Gel, 6840-01-471-5650, Fipronil 0.01%											Yes											
Black Knight Roach Killer, 6840-01-412-4634, D-Phenothrin 2%	Yes					Yes	Yes		Yes			Yes		Yes			Yes		Yes	Yes	Yes	Yes
Callington 1-Shot Aircraft Insecticide, 6840-66-131-2263, D-Phenothrin 2%, Permethrin 2%	Yes					Yes					Yes											
Callington Aircraft Insecticide, 6840-01-675-2534, Permethrin 2%	Yes					Yes																
PT Wasp-Freeze II, 6840-00-459-2443, Prallethrin 0.1%								Yes	Yes								Yes					
MaxForce FC Ant Bait Stations, 6840-01-298-1122, Fipronil 0.01%							Yes															
COMBAT MAX Roach Killing Bait Stations, Large Size, 6840-01-224-1269, Fipronil 0.03%											Yes											
COMBAT MAX Roach Killing Bait Stations, Regular Size, 6840-01-180- 0167, Fipronil 0.03%											Yes											

Table 3 Rodenticides and herbicides on the contingency pesticide list and pests they are labeled to control

	Is the product labeled to control this pest?														
Trade Name, NSN, Active Ingredients	Fleas	Norway Rat	Roof Rat	Cotton Rat	Polynesian Rat	White-Throated Woodrat	Southern Plains Woodrat	Mexican Woodrat	House Mouse	Eastern Harvest Mouse	Golden Mouse	Montane Vole	Meadow Vole	Pine Vole	Grass, Weeds and Brush
Ditrac Super Sized Blox, 6840-00-089-4664, Diphacinone 0.005%		Yes	Yes	Yes	Yes				Yes	Yes	Yes		Yes		
LIQUA-TOX II, 6840-00-753-4972, Sodium Salt of Diphacinone 0.106%		Yes	Yes					Yes							
Kaput Combo Bait Pellets, 6840-01-577-2202, Imidacloprid 0.02%, Warfarin 0.025%	Yes	Yes	Yes					Yes				Yes	Yes	Yes	
LIQUA-TOX II, 6840-01-598-4844, Sodium Salt of Diphacinone 0.106%		Yes	Yes					Yes							
Talon-G Rodenticide Bait Pack Mini-Pellets, 6840-01-598-4840, Brodifacoum 0.005%		Yes	Yes					Yes							
Maki Pellets Place Packs, 6840-01-666-3395, Bromadiolone 0.005%		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes		
Maki Pellets Place Packs, 6840-01-598-2617, Bromadiolone 0.005%		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes		
First Strike Soft Bait, 6840-01-619-6419, Difethialone 0.0025%		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes		
Roundup Pro, 6840-01-108-9578, Isopropylamine salt of glyphosate 41%															Yes
QuikPro, 6840-01-399-0673, Ammonium salt of glyphosate 73.3%, Diquat dibromide 2.9%															Yes

Table 4 List of which application equipment each insecticide on the contingency pesticide list is labeled for

Trade Name, NSN, Active Ingredients	No application equipment needed, product is ready-to-use?	the product labeled for use with this application equipment										Does the product need to be diluted before application? (Some products have instructions on how to apply the product undiluted as well as diluted, be sure to read and follow the label for specific instructions on diluting concentrates)
		Handcan, 2-Gallon Sprayer	Backpack Sprayer	Cold Aerosol Fogger/ULV	Thermal Fogger	Duster	Syringe	Paintbrush	In-Tank-Resistant Bait Station	Truck Mounted Power Sprayer	Truck Mounted Spray Boom Rig	
VectoBac GR, 6840-01-565-8243, <i>Bacillus thuringiensis</i> subspecies <i>israelensis</i> strain AM 65-52.2.8%			Yes									Yes No
Talstar P Professional, 6840-01-525-6888, Bifenthrin 7.9%		Yes	Yes					Yes		Yes		Yes with water
Tempo Ultra WSP, 6840-01-383-6251, Beta-Cyfluthrin 10%		Yes	Yes							Yes		Yes with water
Demon WP, 6840-01-390-4823, Cypermethrin 40%		Yes										Yes with water
DeltaDust, 6840-01-431-3345, Deltamethrin 0.05%					Yes							No
Kills Bedbugs II, 6840-01-573-5024, Deltamethrin 0.03%	Yes											No
Zenivex E20, 6840-01-573-4964, Etofenprox 20%			Yes	Yes	Yes							Yes No if using undiluted. If diluting use oil
Zenprox Aerosol, 6840-01-619-6396, Etofenprox 1.0%, Pyrethrins 0.15%, Tetramethrin 0.5% and Piperonyl Butoxide 1.5%	Yes											No
Gentrol Aerosol, 6840-01-585-9976, (S)-Hydroprene 0.36%	Yes											No
Altosid XR Extended Residual Briquets, 6840-01-424-2495, (S)-Altosid Liquid Larvicide Concentrate, 6840-01-424-2493, (S)-Methoprene	Yes		Yes	Yes					Yes			Yes Yes with water
Dibrom Concentrate, 6840-01-270-9765, Naled 87.4%												Yes No if using undiluted. If diluting use petroleum solvent
Trumpet EC, 6840-01-532-5414, Naled 78%												Yes No if using undiluted. If diluting use petroleum solvent
Kontrol 4-4, 6840-01-550-5660, Permethrin 4.6%, Piperonyl Butoxide 4.6%			Yes	Yes								Yes No if using undiluted. If diluting use mineral oil
Anvil 10-10 ULV, 6840-01-474-7751, Sumithrin 10%, Piperonyl Butoxide			Yes	Yes	Yes							Yes No if using undiluted. If diluting use mineral oil
Pyronyl UL-300 Oil Concentrate, 6840-01-104-0780, Pyrethrins 3% with Synergists				Yes	Yes							No if using undiluted. If diluting use mineral oil
Scourge, 6840-01-359-8533, Resmethrin 4.14%, Piperonyl Butoxide 12.42%			Yes	Yes								Yes No if using undiluted. If diluting use mineral oil
Fyfanon ULV Mosquito Insecticide, 6840-01-169-1842, Malathion 96.5%				Yes	Yes							Yes No if using undiluted. If diluting use fuel oil
Termidor 80 WG, 6840-01-483-3072, Fipronil 80%										Yes		Yes with water
Summit B.t.i. Briquets, 6840-01-377-7049, <i>Bacillus thuringiensis</i> 10.31%	Yes											No
Maxforce Granular Fly Bait, 6840-01-518-5807, Imidacloprid 0.5%, (Z)-9-Tricosene 0.1%								Yes	Yes			No if using undiluted. If diluting use water
Golden Malrin, 6840-01-183-7244, Methomyl 1%, (Z)-9-Tricosene 0.049%								Yes	Yes			No if using undiluted. If diluting use water
Golden Malrin, 6840-01-667-4358, Methomyl 1%, (Z)-9-Tricosene 0.049%								Yes	Yes			No if using undiluted. If diluting use water
Maxforce FC Roach Killer Bait Gel, 6840-01-483-3065, Fipronil 0.01%							Yes					No
Maxforce FC Roach Killer Bait Gel, 6840-01-471-5650, Fipronil 0.01%							Yes					No
Black Knight Roach Killer, 6840-01-412-4634, D-Phenothrin 2%	Yes											No
Callington 1-Shot Aircraft Insecticide, 6840-66-131-2263, D-Phenothrin 2%, Permethrin 2%	Yes											No
Callington Aircraft Insecticide, 6840-01-675-2534, Permethrin 2%	Yes											No
PT Wasp-Freeze II, 6840-00-459-2443, Prallethrin 0.1%	Yes											No
MaxForce FC Ant Bait Stations, 6840-01-298-1122, Fipronil 0.01%	Yes											No
COMBAT MAX Roach Killing Bait Stations, Large Size, 6840-01-224-1269, Fipronil 0.03%	Yes											No
COMBAT MAX Roach Killing Bait Stations, Regular Size, 6840-01-180-0167, Fipronil 0.03%	Yes											No

Table 5 List of which application equipment each rodenticide and herbicide on the contingency pesticide list is labeled for

Trade Name, NSN, Active Ingredients	Is the product labeled for use with this application equipment?							Does the product need to be diluted before application? (Some products have instructions on how to apply the product undiluted as well as diluted, be sure to read and follow the label for specific instructions on diluting concentrates)
	Handcan, 2-Gallon Sprayer	Backpack Sprayer	Paintbrush	In Tamper-Resistant Bait Station	Truck Mounted Power Sprayer	Truck Mounted Spray Boom Rig	Aerial Spray Equipment	
Ditrac Super Sized Blox, 6840-00-089-4664, Diphacinone 0.005%				Yes				No
LIQUA-TOX II, 6840-00-753-4972, Sodium Salt of Diphacinone 0.106%				Yes				Yes with water
Kaput Combo Bait Pellets, 6840-01-577-2202, Imidacloprid 0.02%, Warfarin 0.025%				Yes				No
LIQUA-TOX II, 6840-01-598-4844, Sodium Salt of Diphacinone 0.106%				Yes				Yes with water
Talon-G Rodenticide Bait Pack Mini-Pellets, 6840-01-598-4840, Brodifacoum 0.005%				Yes				No
Maki Pellets Place Packs, 6840-01-666-3395, Bromadiolone 0.005%				Yes				No
Maki Pellets Place Packs, 6840-01-598-2617, Bromadiolone 0.005%				Yes				No
First Strike Soft Bait, 6840-01-619-6419, Difethialone 0.0025%				Yes				No
Roundup Pro, 6840-01-108-9578, Isopropylamine salt of glyphosate 41%	Yes	Yes	Yes		Yes	Yes	Yes	Yes typically with water, except for cut stumps
QuikPro, 6840-01-399-0673, Ammonium salt of glyphosate 73.3%, Diquat dibromide 2.9%	Yes	Yes	Yes		Yes	Yes	Yes	Yes typically with water, except for cut stumps

[illegible]

	Is the product labeled to control this pest?																					
	Mosquito Adults	Mosquito Larvae	Mosquito Pupae	Sandflies	Black Flies/Midges	Flies	Ants	Bees	Wasps	Bed Bugs	Cockroaches	Fleas	Chiggers/Mites	Ticks	Termites	Assassin Bugs	Spiders	Scorpions	Centipedes/Millipedes	Crickets	Stored Product Pests	Silverfish/Firebrats
Trade Name, NSN, Active Ingredients																						
Tempo Ultra WSP, 6840-01-383-6251, Beta-Cyfluthrin 10%	Yes				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Black Knight Roach Killer, 6840-01-412-4634, D-Phenothrin 2%	Yes					Yes	Yes		Yes			Yes		Yes			Yes		Yes	Yes	Yes	Yes

Table 8 Rodenticides authorized for Field Sanitation Team personnel and pests they are labeled to control

	Is the product labeled to control this pest?														
	Fleas	Norway Rat	Roof Rat	Cotton Rat	Polynesian Rat	White-Throated Woodrat	Southern Plains Woodrat	Mexican Woodrat	House Mouse	Eastern Harvest Mouse	Golden Mouse	Montane Vole	Meadow Vole	Pine Vole	Grass, Weeds and Brush
Trade Name, NSN, Active Ingredients															
Ditrac Super Sized Blox, 6840-00-089-4664, Diphacinone 0.005%		Yes	Yes	Yes	Yes				Yes	Yes	Yes		Yes		
Talon-G Rodenticide Bait Pack Mini-Pellets, 6840-01-598-4840, Brodifacoum 0.005%		Yes	Yes						Yes						
Maki Pellets Place Packs, 6840-01-666-3395, Bromadiolone 0.005%		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes		
Maki Pellets Place Packs, 6840-01-598-2617, Bromadiolone 0.005%		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes		

Table 9 Field Sanitation Team application equipment and the Field Sanitation Team pesticides they are recommended for

Is the product labeled for use with this application equipment?								
Trade Name, NSN, Active Ingredients	No application equipment needed, product is ready-to-use	Handcan, 1-Gallon Sprayer NSN 3740-00-191-3677	Handcan, 2-Gallon Sprayer NSN 3740-00-641-4719	In Tamper-Resistant Bait Station, NSN 3740-01-423-0737	Mouse Trap, Spring, NSN 3740-00-252-3384	Rat Trap, Spring, NSN 3740-00-260-1398	Fly Swatter, NSN 3740-00-252-3383	Does the product need to be diluted before application? (Some products have instructions on how to apply the product undiluted as well as diluted, be sure to read and follow the label for specific instructions on diluting concentrates)
Tempo Ultra WSP, 6840-01-383-6251, Beta-Cyfluthrin 10%		Yes	Yes					Yes with water
Black Knight Roach Killer, 6840-01-412-4634, D-Phenothrin 2%	Yes							No
Ditrac Super Sized Blox, 6840-00-089-4664, Diphacinone 0.005%				Yes				No
Talon-G Rodenticide Bait Pack Mini-Pellets, 6840-01-598-4840, Brodifacoum 0.005%				Yes				No
Maki Pellets Place Packs, 6840-01-666-3395, Bromadiolone 0.005%				Yes				No
Maki Pellets Place Packs, 6840-01-598-2617, Bromadiolone 0.005%				Yes				No

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APPENDIX A GLOSSARY

A-1 ACRONYMS

AFPMB	Armed Forces Pest Management Board
APHC	Army Public Health Center
BCT	Brigade Combat Team
CAC	Common Access Card
DET	Detachment
DLA	Defense Logistics Agency
DoD	Department of Defense
DOEHRS-IH	Defense Occupational and Environmental Health-Industrial Hygiene
DOT	Department of Transportation
EPA	Environmental Protection Agency
ESOC	Emergency Supply Operations Center
FGS	Final Governing Standards
HAZMAT	Hazardous Materials
IPM	Integrated Pest Management
IPMIS	Integrated Pest Management Information System
LAAS	Large Area Aerial Spray
MAJCOM	Major Command
MED	Medical
NMCPHC	Navy and Marine Corps Public Health Center
PM	Preventive Medicine
PMP	Pest Management Professional
RQ	Reportable Quantity
SAMS	Automated Medical System
SNAP	Naval Shipboard Non-Tactical ADP Program
TG	Technical Guide

APPENDIX B REFERENCES

AF Joint Manual 24-204/TM 38-250/NAVSUP 505/MCO P4030.19G/DLAI 4145.3,
Preparing Hazardous Materials for Military Air Shipments

AFMAN 32-1053, *Integrated Pest Management Program*

AFPMB TG 14, *Personal Protective Gear and Equipment for Pest Management Personnel*

AFPMB TG 21, *Pesticide Disposal Guide for Pest Control Shops*

AR 40-5, *Medical Services*

ATP 4-02.3, *Army Health System Support to Maneuver Forces*

ATP 4-02.8, *Force Health Protection*

DA PAM 40-11, *Medical Services*

DoD Directive 4715.1E, *Environment Safety and Occupational Health*

DoDI 4150.07, *DoD Pest Management Program*

DoDI 6490.03, *Deployment Health*

DoDM 4150.07, *DoD Pest Management Program*

DoDM 4715.05, *Overseas Environmental Baseline Guidance Document*

Executive Order 11850, *Renunciation of Certain Uses in War of Chemical Herbicides and Riot Control Agents*

OPNAVINST 6250.4c, *Navy Pest Management Programs*

STANAG 2048, *Chemical Methods of Insect and Rodent Control*

TC 4-25.12, *Unit Field Sanitation Teams*

APPENDIX C DILUTION FORMULAS

Dilution Formulas, Weight-Volume Basis for Diluting Solid Concentrates to Make Suspensions or Solutions

Formula 1. $W = \frac{8.34 \times G \times D}{C}$

Where:

8.34 = Constant (Weight on one gallon of water)

W= Weight (lbs) of concentrate

G = Gallons desired

C = % of active ingredient in concentrate (expressed as a whole number for example 80% is expressed as 80)

D = % of active ingredient in finished spray (expressed as a whole number for example 2% is expressed as 2)

Formula 2. $G = \frac{W \times C}{8.34 \times D}$

Formula 3. $D = \frac{W \times C}{8.34 \times G}$

Example:

How many pounds of 80% carbaryl wettable powder will be used to obtain 100 gallons of a 2% spray?

Using Formula 1. $W = \frac{8.34 \times G \times D}{C} = \frac{8.34 \times 100 \times 2}{80} = 20.85$ lbs of wettable powder

Weight-Weight or Volume-Volume for Diluting Dust in Dust or Liquid in Liquid

Formula 4. $VC = \frac{VT \times D}{C}$

Where:

VC = Weight or volume of concentrate

VT = Total weight or volume of the finished spray

C = % of active ingredient in concentrate (expressed as a whole number for example 80% is expressed as 80)

D = % of active ingredient in finished spray (expressed as a whole number for example 2% is expressed as 2)

Formula 5. $VT = \frac{VC \times C}{D}$

Formula 6. $D = \frac{VC \times C}{VT}$

Example:

How much 95% concentrate will you use to obtain 200 gallons of 1% malathion solution to be diluted with fuel oil?

Using Formula 4. $VC = \frac{VT \times D}{C} = \frac{200 \times 1}{95} = 2.1$ gallons = 2 gallons + 13 ounces

"Sad Cow" Formula for Diluting Liquid Concentrates Prepared for Pounds of Insecticide per Gallon

"SAD COW" Formula $Q = \frac{S \times A \times D}{C \times W}$

Where:

Q = Quantity of concentrate required in gallons

S = Strength of percentage of active ingredient in finished spray

A = Amount of spray to be prepared in gallons

D = Density: weight of one gallon of diluent (usually water, 8.34 lb/gal)

C - Concentrate: percentage of active ingredient (constant), expressed as a whole number: 2% - "2"

W - Weight of actual insecticide (lb) in each gallon of concentrate

Example: How much liquid concentrate is required if 10 gallons of a 2 % emulsion are desired and the concentrate contains 8 lbs/gal active ingredient?

$Q = \frac{S \times A \times D}{C \times W} = \frac{2 \times 10 \times 8.34}{100 \times 8} = 166.8/800 = 0.21$ gallons (26.88 ounces)

Most insecticides are now sold with the label indicating pounds of insecticide per gallon and percentage of toxic materials. In such a case, the weight to weight formula is modified so that the factor C is considered technical grade insecticide (100% active ingredient), and a factor W (pounds of insecticide per gallon) is added.

APPENDIX D CALCULATING APPLICATION RATES

Linear Application

For speed in mph given the flow rate (gallons per hour) and gallons required per linear mile. $\text{Speed} = \frac{\text{Flow rate}}{\text{Gallons per mile}}$

Area Application

For gallons required given gallons per acre, square feet in the area to be treated, and 43,560 feet per acre. $\text{Gallons} = \frac{\text{sq ft} \times \text{gals. per acre}}{43,560}$

For speed in feet per minute given 43,560 feet per acre, flow rate per minute (gals), swath width (ft), and gallons per acre required. $\text{Speed} = \frac{\text{sq ft} \times \text{gals. per minute}}{\text{swath width} \times \text{gals. per acre}}$

For gallons per acre given 43,560 feet per acre, flow rate per minute (gals), swath width (ft), and gallons per acre required. $\text{Gals/acre} = \frac{43,560 \times \text{gals. per min}}{\text{swath width} \times \text{speed}}$

Applying a Certain Percent of Pesticide

(All percentages are expressed as whole numbers: 5% = "5")

1. Solutions or Emulsions.

$$\text{Gal of conc. to add} = \frac{\text{Gal of spray desired} \times \% \text{ desired} \times \text{Wt of diluent}}{\text{lbs. of technical grade per gallon} \times 100}$$

2. Suspensions.

$$\text{Pounds of WP to add} = \frac{\text{Gal of spray desired} \times \% \text{ desired} \times \text{Wt of diluent}}{\text{lbs. of technical grade per pound} \times 100}$$

3. Dusts or Dry Baits

$$\text{Pounds of conc. to add} = \frac{\text{Lbs of material desired} \times \% \text{ desired}}{\% \text{ of concentrate}}$$

Applying Pounds of Active Ingredient Per Acre

1. Solutions or Emulsions.

$$\text{Gal of concentration to add} = \frac{\text{Recommended application rate (wt in lbs)} \times \text{number of acres to treat}}{\text{lbs. of technical grade per gallon}}$$

$$\text{Amt of dilute spray needed} = \frac{\text{Machine output (gal/min)} \times 500 \times \text{no. acres to treat}}{\text{swath width} \times \text{MPH}}$$

2. Wettable Powders, Dusts, Granules, or Baits.

$$\text{Amt of concentration to add} = \frac{\text{Recommended appl rate (wt in lbs)} \times 500 \times \text{no. acres to treat}}{\text{lbs. of technical grade per lbs of concentration}}$$

$$\text{Amt of dilute spray needed} = \frac{\text{Machine output (lbs of gal/min)} \times 500 \times \text{no. acres to treat}}{\text{swath width} \times \text{MPH}}$$

3. If the amount of dilute pesticide needed exceeds the capacity of the tank you are using, the amount of concentrate to be added per tankful can be calculated by:

$$\text{Amt of concentration to add per tankful} = \frac{\text{Amt of concentration to add} \times \text{tank capacity}}{\text{Amt of dilute pesticide needed}}$$

NOTE: The application rate and the amount of technical grade material per gallon must be in the same weight terms. That is, if the application rate is given in ounces, you must convert it to pounds before using formulas 1 or 2. If the application rate is given in ounces, read the pesticide label carefully to make sure the ounces refer to weight (16 oz/lb) and not liquid volume (128 oz/gal).

APPENDIX E CONVERSION FACTORS, U.S. AND METRIC

1 mile = 1,760 yards = 5,280 feet = 1.6 kilometers = 1,609 meters
1 mile (nautical) = 6,080.2 feet = 1.8 kilometers = 1,853 meters
0.621 miles = 1,093.6 yards = 1 kilometer = 1,000 meters
1 yard = 3 feet = 36 inches = 0.91 meter = 91.4 centimeters
1.094 yards = 3.28 feet = 39.37 inches = 1 meter = 100 centimeters
0.333 yard = 1 foot = 12 inches = 0.3048 meter = 30.48 centimeters
0.083 feet = 1 inch = 2.54 centimeters
0.032 feet = 0.394 inch = 1 centimeter = 10 millimeters
0.0032 feet = 0.0394 inch = 1 millimeter = 1,000 microns
0.000003 feet = 0.000039 inch = 0.001 millimeter = 1 micron

Temperature Scale

°C	0	5	10	15	20	25	30	35	40	45	50	55	60	80	100
°F	32	41	50	59	68	77	86	96	104	113	122	131	140	176	212

°C = degrees Celcius = $5/9 \times (\text{degrees Fahrenheit} - 32)$

°F = degrees Fahrenheit = $32 + (9/5 \times \text{degrees Celcius})$

Area

1 square mile = 640 acres = 259 hectares = 2.59 square kilometers = 2,590,000 square meters
0.39 square mile = 247 acres = 100 hectares = 1 square kilometer = 1,000,000 square meters
0.0038 square mile = 2.47 acres = 1 hectare = 10,000 square meters
1 acre = 4,840 square yards = 43,560 square feet = 0.405 hectare = 4,047 square meters
1.2 square yards = 10.76 square feet = 1,550 square inches = 1 square meter
1 square yard = 9 square feet = 1296 square inches = 0.84 square meter
1 square foot = 144 square inches = 0.093 square meter = 930 square centimeters
1 square inch = 0.007 square foot = 6.45 square centimeters

Volume

1 cubic foot = 1,728 cubic inches = 0.037 cubic yards = 28.32 liters
0.000579 cubic foot = 1 cubic inch = 16.39 cubic centimeters = 16390 cubic millimeters
1.307 cubic yards = 35.32 cubic feet = 1 cubic meter = 1,000 liters
128 cubic feet = 1 cord of wood

Liquid Capacity

1 U.S. gallon = 231 cubic inches = 4 quarts = 3.79 liters
0.26 U.S. gallon = 1.06 quart = 1 liter = 1,000 milliliters
1 U.S. quart = 32 U.S. fluid ounces = 2 pints = 0.9453 liter
1 pint = 16 fluid ounces = 2 cups = 473.2 milliliters
1 tablespoon = 3 teaspoons = 0.5 U.S. fluid ounces = 14.8 milliliters
1 cup = 16 tablespoons = 8 fluid ounces = 236.6 milliliters
1 fluid ounce = 2 tablespoons = 29.57 milliliters

Weight

0.035 ounce = 1 gram = 1,000 milligrams
1 ounce = 0.0625 pounds = 28.35 grams
1 grain = 1/7,000 pound = 64.79 milligrams
1 pound = 16 ounces = 453.6 grams
2.2 pounds = 35.37 ounces = 1 kilogram = 1,000 grams
2,204 pounds = 1 metric ton = 1,000 kilograms
1 U.S. ton (short) = 2,000 pounds = 907 kilograms
1 U.S. ton (long) = 2,240 pounds = 1,016 kilograms

APPENDIX F USAF AERIAL SPRAY CONTINGENCY CAPABILITY

Large area aerial spray (LAAS) capability has a long history of successfully supporting military missions that date back to World War II. Current Air Force C-130 based assets provide unequaled capability to control 90-99% of disease vectors while covering 2 square miles per minute. Reference (a) lists 83 diseases of military importance with 2/3 of them (53) being vectored or carried by insects and other arthropods. High risk vector-borne diseases, especially malaria and dengue fever (limited aerial spray effectiveness for dengue fever), makes them potential war stoppers in large areas of the world (references b & c). Medical planners estimating worst case scenarios for military operations in semi-tropical and tropical regions should plan for the deployment of Air Force LAAS to provide maximum support for prevention of vector-borne disease in accordance with reference (d) and Operational Requirements.

Numerous situations can develop in an operational contingency which would make LAAS the method of choice for vector control operations:

- Environmental conditions (i.e. flooding or limited road access) could make ground control methods unfeasible or too slow to effect disease control over a wide area.
- Disease epidemics or potential outbreaks require swift control of vectors to break the disease cycle and stop the epidemic.
- Post-conflict ground vector control operations may remain too hazardous in many areas until mines and booby traps can be cleared.
- Natural disasters such as hurricanes and earthquakes create humanitarian relief situations where LAAS could prevent the spread of vector-borne disease or stop an ongoing epidemic.

Concept of Operation

- Two early-morning or late afternoon sorties each day using two aircraft at 100-300 feet AGL can effectively control 90-99% of disease vectors and pest insects.
- Can apply liquid larvicides for long term mosquito control.
- Normal swath widths of 1,000 - 3,000 feet over secure areas can treat 2 square miles per minute.
- Over non-secure areas, stand-off swath widths of up to 2.5 miles result in coverage of 20 square miles per minute by controlled drift.
- Four Modular Aerial Spray Systems (MASS) are available.
- Four C-130 aircraft are outfitted to accept the MASS.

Potential areas for use of C-130 aerial spray are:

- Troop and equipment staging areas for return to CONUS, including a buffer area to reduce disease vector re-infestations.

- In-theater troop concentration sites with potential vector-borne disease problems within the combat zone and communication zone of the theater. Refugee/EPW holding areas.
- Airfields.

Requests for LAAS should include:

- Location of spray area with map coordinates, or boundaries marked on a map, or GPS UTM coordinates.
- Spray timing requested (date and time).
- Acreage to be sprayed including a buffer zone.
- Point of contact, with phone number if possible.
- Target disease vectors or pests to be controlled.
- Hazards (Low-level flight or enemy).

Statements of Need for this support flow through the Major Component Command Surgeon's office to the Office of the Surgeon for the CINC. Direct liaison with aerial spray personnel may be authorized at the discretion of the respective surgeons.

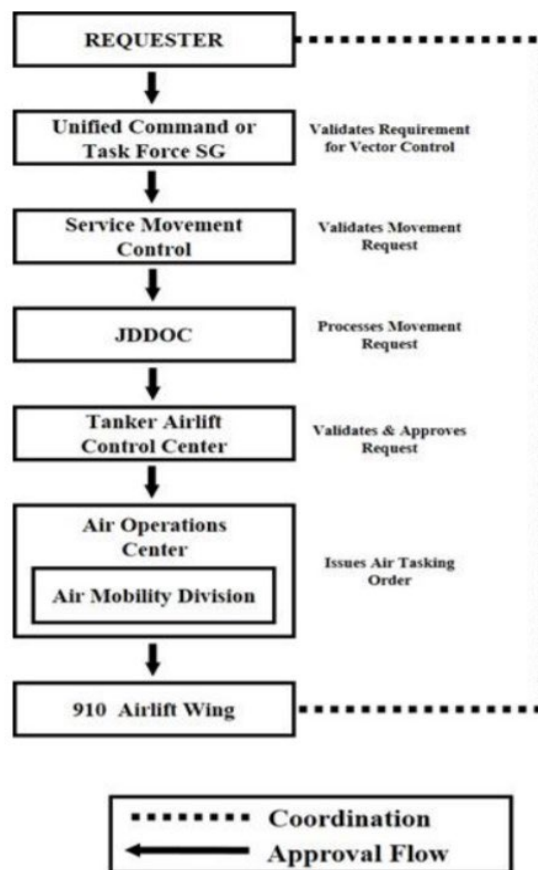
Information must be provided to all unit commanders and ground forces regarding the purpose and timing of the spray missions.

CONUS POC's are:

- US Air Force: 910th Airlift Wing, Aerial Spray Unit, DSN 346-1965/1412/1793, Commercial (330) 609-1965/1412/1793
- Armed Forces Pest Management Board, Contingency Liaison Officer, DSN 295-8309/7476, Commercial (301) 295-8309/7476, Fax 7473.

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Figure 7.5. Process for Requesting 910 Airlift Wing Support in Contingencies.



References:

Handbook of Diseases of Military Importance, Defense Intelligence Agency, Pub. DST-1 81 OH-001-8.

World Malaria Situation, World Health Organization, Weekly Epidemiological. Record, 22 Jun 90.

Halstead, S.B., Global Epidemiology of Dengue Hemorrhagic Fever, S.E. Asian J. Trop. Med. Pub. Health, Dec 1990.

DoD Instruction 4150.07, "DoD Pest Management Program," 29 May 2008.

AFMAN 32-1053 "Integrated Pest Management Program", 6 August, 2019.

AFMAN 24-204/TM 38-250/NAVSUP PUB 505/MCO P4030.19G/DLAI 4145.3,

"Preparing Hazardous Materials for Military Air Shipment," 13 July, 2017.

APPENDIX G APPROVAL FOR LOCAL PURCHASE OF PESTICIDES DURING MILITARY DEPLOYMENTS

Except where an emergency exists as determined by the Task Force Commander, only pesticides listed on the DoD Contingency Pesticide List shall be used during contingency operations. During emergency conditions, a pesticide that is not EPA-registered may be procured locally, but only after receiving the proper approval as outlined below.

To locally purchase a pesticide that is NOT on the DoD Contingency Pesticide List (for emergency use only):

- **The pesticide is EPA-registered** - contact the supporting deployment Pest Management Consultant (PMC) for the component command for approval. If the contract is Army then the request would go to the ARCENT PMC, if Air Force then the request would go to the AFCENT PMC and if Navy then the NAVCENT PMC. The PMC will verify that the product is currently EPA registered and is labelled for the intended use, and if it checks out then the PMC can approve the product. If it is a Joint Task Force location where no service has been designated as the base operations service integrator then it would fall under the CENTCOM PMC to approve the pesticide.
- **The pesticide is NOT EPA-registered** - contact the Contingency Liaison Officer at the AFPMB for approval.