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Technical Guide No. 15**

Pesticide Spill Prevention and Management



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Foreword

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Comments and recommended changes can be forwarded by email to osd.pentagon.ousd-atl.mbx.afpmb@mail.mil, by fax to (301) 295-7473, or by mail to US Army Garrison Forest Glen, Armed Forces Pest Management Board, ATTN: Chief, Strategy and Information Division, 2460 Linden Lane, Bldg. 172, Silver Spring, MD 20910.

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Disclaimer

TG 15 mentions specific proprietary products where examples are needed. Such information does not constitute a recommendation or endorsement of these products by the Department of Defense (DoD). Neither should the absence of an item be interpreted as DoD disapproval.

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Introduction and Purpose

Practically all DoD installations routinely do pest control operations. The magnitude of these operations depends largely on the size of the installation and whether the work is contracted or done in-house. Both diluted and concentrated pesticides are used. Use of these chemicals involves handling, storage, application and disposal of various pesticides.

Most installations use a wide variety of pesticides ranging from those that are practically nontoxic for mammals to those that are highly toxic. Included are insecticides, herbicides, fungicides, fumigants, nematocides, rodenticides and other miscellaneous pesticides. Each of these pesticides has particular characteristics that require special attention. This document was developed as a guide for developing plans for pesticide spill prevention, control and cleanup. It does not take into account the special characteristics of each group to any great extent.

The probability of a pesticide spill can be effectively reduced by regularly training personnel in:

- a. Pesticide spill prevention, control and cleanup procedures.
- b. Methods of handling and storing pesticides.
- c. Pesticide facility safety and fire regulations.

Additional spill prevention practices should include:

- a. Properly securing pesticides in vehicles and facilities.
- b. Inspecting storage areas for leaking or damaged containers on a monthly basis.
- c. Adequate contingency planning for controlling and cleaning up spills.
- d. Providing and properly maintaining spill kits at all pesticide storage and mixing facilities, and in pesticide vehicles.

In spite of planning and training, spills do occur. Spills range from a one-gallon service container falling off a vehicle, to several 55-gallon drums punctured by a forklift. The worst case of a spill would be exploding containers in a fire. The problem for all persons concerned is the management of the spill, the cleanup and the proper disposal of all residual material. A list of materials for a spill cleanup kit is found in Appendix A.

Legal Requirements

Most pesticide spills occur in areas such as loading docks, warehouses and mixing areas. If the spill did not result in a release to the environment (*i.e.*, no lost material such as might occur in a confined area, diked pad with no outlet, or on a sealed concrete floor of an enclosed facility) and there is no threat to air, soil, or water environments, then the spill is not reportable to external regulatory agencies. If the spill occurred under uncontrolled conditions, such as onto grounds outside the pesticide facility, and the amount spilled equaled or exceeded a reportable quantity (RQ) as defined by Part 117 of the Clean Water Act (CWA) (40 CFR 117), Part 302 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (40 CFR 302.5), or Section 112(r) of the Clean Air Act (CAA) (40 CFR 68) then the spill must be reported to external agencies because of the potential effects on the environment. Reportable quantities for pesticides on the DoD pesticide list are found in Appendix D. The reporting procedure will be explained later.

Report all spills to your chain-of-command regardless of the amount spilled. Installation environmental engineers/coordinators can help in making a RQ determination, and in properly reporting hazardous substance releases to regulatory agencies. Failure to report a spill is a violation of federal law.

The National Oil and Hazardous Substances Pollution Contingency Plan (40 CFR 300) requires federal agencies to develop plans and procedures for containment and cleanup of accidental discharges of hazardous substances. In compliance with this regulation, pesticide facilities shall be included in installation hazardous substance spill contingency plans. Procedures for the handling and disposal of spill cleanup residues according to the requirements of the Resource Conservation and Recovery Act (RCRA) should also be addressed in the spill contingency plans.

For DoD sites overseas, guidance for compliance purposes is found in two documents. For sites governed by a Status of Forces Agreement (SOFA), the Final Governing Standards for the host country cover spills specifically in Chapter 18: Spill Prevention and Response Planning; specific media areas are covered in Chapter 6: Hazardous Waste; Chapter 9: Petroleum, Oil and Lubricants; and Chapter 11: Pesticides. Of note, in Chapter 11: Pesticides, there is a requirement that the Installation Spill Contingency Plan address pesticides. For DoD sites overseas without a SOFA in place, follow the guidance in the OPLAN covering the operation. For enduring or legacy sites, the Overseas Environmental Baseline Guidance Document: Hazardous Materials, Storage Tanks, Spills and Pesticides applies per DoD Manual 4715.05, Vol. 4. The storage of pesticides as hazardous materials is addressed in Section 4, Hazardous Materials, and requirements for spill prevention and response are addressed in Section 7, Spill Prevention and Response. For questions regarding overseas sites, contact your command pest management consultant.

Spill Prevention

The best means by which a spill can be reduced or prevented is to take precautionary measures, such as providing adequate storage facilities for all pesticide chemicals, monthly inspections of these facilities, and ensuring that emergency equipment is on hand for spill cleanup. The following guidelines should be followed for reducing the probability and severity of a spill:

General Procedures

1. Train personnel in proper procedures for handling pesticides during receipt, storage, formulation, loading, application and disposal.
2. Advise and train pest control personnel in proper spill prevention, emergency response and containment procedures.
3. Identify locations and operations where spills are likely to occur.
4. Prepare pesticide spill emergency response and spill control countermeasure plans for pesticide facilities and storage areas, consistent with the total hazardous materials management and spill contingency plans for the facility.
5. Post emergency phone numbers in conspicuous locations.
6. Prepare and maintain spill kits.
7. Inspect storage areas monthly and spill kits quarterly.

Storage Procedures

Proper storage of pesticides can be accomplished by employing the following procedures:

1. Store all pesticides with labels plainly visible. Containers should be checked at least monthly to ensure that lids are tight and containers are not damaged. They should be stored in rows off the ground on metal shelving to provide effective access.
2. Incompatible pesticides, such as herbicides and insecticides, must be stored separately in order to avoid cross-contamination or adverse reactions. Phenoxy, ester, urea, and other volatile herbicides should be physically separated (not share the same air ventilation system) from all insecticides. Where separate air supplies are not feasible, the pesticides should be arranged so that clean air flows continuously from the insecticides past the herbicides and out of the facility. A list of pesticide incompatibilities is found in Appendix B.

3. Containers must be stored in well-ventilated (six room air changes per hour) dry storage areas. The temperature inside the storage area should be between 50-100 degrees Fahrenheit (10-38 degrees Celsius), unless a label dictates otherwise. Stored pesticides should be protected from freezing temperatures and direct sunlight. See Technical Guide 17 for more specific guidance on pesticide storage requirements.
4. Emergency procedures (fire, spill, etc.) should be conspicuously posted near work areas and exits. A complete inventory of the pesticides contained in the storage area should be posted on the exterior of the building and given to the local fire department along with the name and phone number of the pest control facility supervisor and building custodian.
5. Containers found leaking or damaged should be handled as follows:
 - (a) Don appropriate protective equipment and ensure that backup responders are available.
 - (b) Separate clean undamaged containers from those that are leaking.
 - (c) Isolate, for later cleanup, any containers that have been contaminated by leaks.
 - (d) Pesticides in leaking containers should be repackaged. Overpacking may be employed only if the pesticide and its container are being prepared for disposal. Repackage when necessary by obtaining containers of the same type (e.g., plastic or metal) used originally to store or transport the pesticide chemicals. The numbers on the bottom of the containers, either Department of Transportation (DOT) or Federal Specifications (Fed. Spec.), refer to the proper container specifications to be used for repackaging. Broken bags can be placed in heavy-duty plastic bags and sealed with twist ties. Leaking drums can be temporarily sealed using epoxy glue, fiberglass patch kits, or other suitable materials on hand.
 - (e) The complete Environmental Protection Agency (EPA)-approved label must be affixed to the repackaged pesticide containers.
 - (f) Transfer contents of each leaking container by pouring or siphoning the contents into the new container. When pouring, use a wide-mouth funnel. Use only a mechanical siphon. NEVER START SIPHON BY MOUTH. Use a forklift to lift large containers. Mechanical pumps may also be used for transferring liquids to new containers.
 - (g) Clean any spilled pesticides from the outside of contaminated containers by using decontamination and/or cleaning solutions (household detergent). Collect all rinsate in a drip pan and store in a marked drum for proper disposal. Clean the inside of the damaged container by triple rinsing. All collected spilled materials may be used in

accordance with the label. All rinsate can be saved for future use as a diluent.

- (h) All contaminated areas should be thoroughly cleaned after completing the repackaging operation (refer to Appendix C for decontaminants).

Spill Contingency Planning

Contingency plans call for pre-planning the response to and cleanup of a spill that occurs despite all precautions. Site specific pesticide spill contingency plans should be developed for all pest control facilities and pesticide storage areas. This plan should be included in, or attached as an annex to, the facility's Integrated Pest Management Plan, Hazardous Waste Management Plan, Oil and Hazardous Substances Spill Contingency Plan, and Installation Spill Prevention Control and Countermeasure Plan. The plan should outline specific procedures to be followed when a pesticide spill occurs and clearly identify the roles and responsibilities of each individual involved in the overall response scheme. Such a plan will save valuable time and will effectively reduce human risk and environmental damage from an accidental spill. The plan should include the following information:

Notification List

Include the emergency phone numbers for:

- Designated installation spill coordinator or the contact designated in the installation spill contingency instruction.
- Nearby offices and buildings requiring evacuation.
- Installation fire and security departments.
- Installation industrial hygienist.
- Installation or activity hazardous waste management coordinator.
- Nearest emergency medical unit.
- Local poison control center at 1-800-222-1222 nationwide or the website for the Poison Control Centers at <https://triage.webpoisoncontrol.org/#!/exclusions>.
- National Response Center (NRC) at 800-424-8802 or 202-267-2675 or at website <http://nrc.uscg.mil/> to be notified immediately when spills occur in US waters.
- Local Emergency Planning Committee (LEPC) and State Emergency Response Commission (SERC 2021) at <http://www.epa.gov/epcra/state-emergency-response-commissions-contacts>.
- DoD Pesticide Hotline (410-436-3773) DSN 584-3773 operated by the U. S. Army Public Health Center (APHC).

Inventory of Pesticides

Include a complete list of all pesticides on hand with EPA registration numbers and manufacturer's name and address.

Sketch Map

Include a detailed, up-to-date sketch or map of the pesticide facility and storage areas showing exterior runoff patterns, nearby water sources (wells, lakes, streams, *etc.*), water drainage patterns and times, volume capacity of holding basins, available gate valves in storm drainage systems, storage location of specific pesticides, and location of spill kits and other emergency response equipment.

A copy of this plan should be given to the installation's spill coordinator and the fire department for use in responding to emergencies. Another copy of this plan should be maintained in a highly visible location within the pesticide facility or storage area.

Spill Kits

Spill kits should be included as part of a spill contingency plan. Being properly prepared for handling pesticide spill emergencies requires preparation of a pesticide spill kit and understanding the steps to be followed when a spill occurs. The kit should contain an emergency spill procedures sheet and should be labeled and designated only for use in managing pesticide spills. Recommended materials for inclusion in the pesticide spill kit are listed in Appendix A. Most items can be obtained through the federal supply system or local manufacturers and suppliers.

The size and contents of each spill kit vary with the amount and type of pesticides handled by the facility. Each pest control vehicle that transports pesticides should have a small spill kit and procedures for cleaning up and decontaminating spills from service containers or sprayers. The exact contents of each spill kit should be tailored to the needs of the individual pesticide facility. The spill kit should be sufficient to contain and clean-up the largest container or sprayer at the site. Each pest control vehicle should carry a minimum of two gallons of clean water for personal decontamination.

Spill Emergency Procedures

When a pesticide spill occurs, specific procedures should be followed for providing first aid, notifying proper authorities, and cleaning up and decontaminating the spill area. Personnel working with pesticides, or in areas containing pesticide chemicals, should be adequately trained for quick evacuation and proper spill prevention and emergency procedures as follows:

Identification

Determine the pesticide involved in the spill incident. Information such as the formulation, percent active ingredient, and manufacturer's name and address should be obtained from the Safety Data Sheet (SDS).

Safety and First Aid

All persons working with pesticides should be well trained in basic first aid procedures. It must be emphasized that when managing any spill the most immediate concern is for the health and well being of persons in and around the immediate spill area.

First aid kits and personal protective equipment should be maintained at pest control facilities and storage areas and carried on pest control vehicles. In addition to SDSs, the telephone numbers of the local medical unit and poison control center should be posted in conspicuous locations and always carried by pest control personnel when on the job.

Care of Injured

Pesticide spill emergencies will differ, but the immediate concern should be to minimize contamination of personnel. Although the sequence may vary, the following basic procedures should be accomplished as rapidly as possible. **PRIOR TO ENTERING A CONTAMINATED AREA, DON PERSONAL PROTECTIVE EQUIPMENT (PPE).**

1. Quickly assess the spill to determine if personnel are involved.
2. Eliminate all sources of ignition (e.g., pilot lights, electric motors, gasoline engines) in order to prevent the threat of fire or explosion from inflammable vapors (if present).
3. If personnel are involved, the rescuer should quickly remove the injured to a safe location upwind from the spill. If the spill occurs in an enclosed area, doors and windows should be opened to enhance ventilation of the area.
4. Remove contaminated clothing from the victim and/or rescuer, and wash affected areas of body with soap and water. Administer first aid appropriate for the symptoms/signs and as specified on the pesticide label.

5. Obtain medical assistance for injured or contaminated persons. Do not leave injured or incapacitated persons alone—instruct someone to stay with them until medical assistance is provided.

Site Security

Secure the spill site from entry by unauthorized personnel by roping off the area and posting warning signs. The boundary should be set at a safe distance from the spill. If necessary, obtain assistance from the installation police or security unit.

Containment and Control

Spilled pesticides must be contained at the original site of the spill. The pesticide must be prevented from entering storm drains, wells, water systems, ditches, and navigable waterways by following these procedures:

1. Don appropriate protective equipment.
2. Prevent further leakage by repositioning the pesticide container.
3. Prevent the spill from spreading by trenching or encircling the area with a dike of sand, absorbent socks, or booms, loose absorbent material, or, as a last resort, soil or rags.
4. Cover the spill. If the spill is liquid, use an absorbent material appropriate to the type of material. If dry material, use a polyethylene or plastic tarpaulin and secure. **NOTE:** Use absorbent materials sparingly as they also must be disposed of as wastes.

Pesticide Spill Reporting

Not all pesticide spills warrant reporting to EPA or the Coast Guard. However, spills that involve pesticides equal to or exceeding the designated reportable quantity (RQ) specified in the EPA's Clean Water Act list of hazardous substances, and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) list of hazardous substances—see Appendix D for RQs of major pesticides—must be reported. All pesticide spills should be reported in accordance with each service's regulations (Air Force, AFI 32-7001, Environmental Management; Navy, OPNAV M-5090.1, Environmental Readiness Program Manual; Army, AR 200-1, Environmental Protection and Enhancement; Marine Corps, MCO 5090.2, Environmental Compliance and Protection Program) and the installation's spill contingency instruction. Pesticide spills should be reported to the spill coordinator designated in the installation's spill contingency directive. The coordinator in turn will report the spill to EPA or the Coast Guard, as required.

The individuals or agencies listed in the Notification List above should be notified, as appropriate, when spills occur. These contacts also can provide information on how to cope with problems that may be encountered in handling pesticide spills. The telephone numbers of

contacts should be posted as part of the pest control facility's or installation's emergency plan.

Cleanup

Adequate cleanup of spilled pesticides is essential in order to remove any health or environmental hazards. When cleaning up pesticide spills, it is advisable NOT TO WORK ALONE and to make sure the area is properly ventilated. All personnel must use appropriate protective equipment. Responses to incidental releases of hazardous substances where the substance can be absorbed, neutralized, or otherwise controlled at the time of release by employees in the immediate release area, or by maintenance personnel are not considered to be emergency responses. However, if the release is not an incidental release, only qualified, trained emergency personnel should undertake cleanup operations. Minimum initial training and refresher training requirements are specified in the Occupational Safety and Health Standards of 29 CFR 1910.120 (Hazardous Waste Operations and Emergency Response, "HAZWOPER" training) or NFPA 472.

1. Dry spills (dusts, wettable powders, granular formulations) should be picked up in the following manner:
 - (a) Immediately cover powders, dusts, or granular materials to prevent them from becoming airborne. This can be done by placing a polyethylene or plastic tarpaulin over the spilled material. Weight the ends of the tarp, especially the end facing into the wind. Begin cleanup operations by systematically rolling up the tarp while simultaneously sweeping up the spilled pesticide using a broom and shovel or dust pan. While sweeping, avoid brisk movements in order to keep the dry pesticide from becoming airborne. If indoors, a cover may not be necessary. When practical, a light sprinkling of water may be used instead of a cover.
 - (b) Collect the pesticide and place in plastic or metal containers. Heavy-duty plastic bags should be used as a last resort as some pesticides may corrode through the plastic bags. Properly secure and label the bags, identifying the pesticide and possible hazards. Set the bags aside for later disposal.
2. Liquid spills should be cleaned up by placing an appropriate absorbent material (floor-sweeping compound, sawdust, sand, etc.) over the spilled pesticide. Work the absorbent into the spill using a broom or other tool to force the absorbent into close contact with the spilled pesticide. Collect all spent absorbent material and place into a properly labeled leakproof container.
3. Depending upon the spilled substance, contaminated soil may have to be removed to depths where no detectable amounts of the substance are evident. Residues may need to be placed in properly labeled leakproof containers. For this determination, contact the installation environmental engineer/coordinator.

Decontamination

Decontamination solutions can be used for decontaminating surfaces and materials where spills

of dust, granular, wettable powder, or liquid pesticides have occurred. However, the bulk of the spilled pesticide should be cleaned up or removed before applying any decontaminant. After cleaning up the bulk material, apply the appropriate decontamination solution and allow one to six hours reaction time before using an absorbent material.

Depending on the location of the spill and the pesticide spilled, chlorine bleach, caustic soda (lye, sodium hydroxide) or lime can be used to effectively decontaminate most spill areas. Many pesticides, especially the organophosphate pesticides, decompose when treated with lye or lime. Fewer pesticides are decomposed by bleach (sodium hypochlorite) (Appendix B).

Dry decontaminants should be spread thinly and evenly over the spill area. Then, using a watering can, lightly sprinkle the area with water to activate the decontaminant. Liquid decontaminants should be premixed and applied with a watering can to the spill area. Decontaminants should be applied in amounts no greater than that specified in Appendix C.

The preceding procedures must be repeated until all the spilled pesticide is removed. Clean all equipment used for spill cleanup with detergent and appropriate decontaminants. Collect all spent decontaminants and rinse water and place them in labeled leakproof containers. Clothing and gloves that cannot be decontaminated must be placed in leakproof containers for proper disposal. Additional procedures may be needed for particular surfaces:

1. Nonporous surfaces should be washed with detergent and water. The appropriate decontamination solution should be thoroughly worked into the surface using a long-handled broom, scrub brush, or other equipment as needed. Then the decontamination solution is soaked up using absorbent material. The spent absorbent material is then placed into a labeled leakproof container for disposal.
2. Soil. If pesticide containers have leaked or if pesticides have been spilled on a soil surface, depending upon the spilled substance, contaminated soil may have to be removed to depths where no detectable amounts of the substance are evident. Residues may need to be placed in properly labeled leakproof containers.
3. Porous materials such as wood may not be adequately decontaminated. If contamination is great enough to warrant, they must be removed and replaced with new materials.
4. Tools, vehicles, equipment, and any contaminated metal or other nonporous objects can be readily decontaminated using detergent and the appropriate decontamination solution (refer to Appendix B). However, smaller quantities of the decontamination solution may be required.

The decontamination solution can be applied to contaminated equipment by soaking the equipment in a pail filled with solution or using a scrub brush. All tools and surfaces must be thoroughly rinsed with small amounts of clean water. All rinse water and spent decontamination solution should be collected in drip pans or other suitable containers and

transferred to a properly labeled leakproof drum for disposal.

Disposal

All contaminated materials, including cloth, soil, wood, etc., that cannot be effectively decontaminated as described in this guide must be removed and placed in a sealed leakproof container. All containers must be properly labeled and transported in accordance with Department of Transportation (DOT) 49 CFR Part 172 regulations by EPA-permitted hazardous waste haulers for disposal in a hazardous waste disposal facility (incinerator, landfill site, etc.) under current EPA or state permit. Coordinate with the installation or activity hazardous waste coordinator on disposal procedures.

Post-Spill Procedures

After the spill has been decontaminated, the following actions should be taken to ensure that decontamination has been adequate:

Sample Collection and Analysis

Representative samples of affected environmental areas (soil, water, sediment, etc.) should be collected and analyzed for pesticide content to ensure that decontamination was effective.

Investigation of Cause

An investigation into the cause of the spill and any contributing events should be undertaken in order to ascertain why the spill occurred. This information will be of benefit in making future spill prevention recommendations. In addition, the spill episode should be well documented for future reference.

Disposal

Contaminated materials should be properly disposed of in accordance with applicable regulations. Guidance on disposal can be obtained from Section 13 of pesticide SDSs, which address disposal considerations.

Additional Information and Assistance

Comprehensive information about pesticide spill, prevention, cleanup and decontamination can be obtained from the DoD Pesticide Hotline at commercial 410-436-3773, DSN 584-3773, email usarmy.apg.medcom-aphc.mbx.pesticide-hotline@mail.mil, operated by the US Army Public Health Center (APHC), Aberdeen Proving Ground, MD; the respective Army Public Health Command Region office; regional Naval Facilities Systems Engineering Command (NAVFAC) Applied Biologists; or the Air Force Research Laboratory, Wright-Patterson AFB OH. If these sources are unable to provide the necessary information about a spill, the following additional sources are available:

EPA Pesticide Product and Label System (PPLS)

A searchable database of all pesticide products registered in the United States. It includes registrant name and address, labels, active ingredients, product brand names, site/pest uses, and registration status. Searchable at <https://iaspub.epa.gov/apex/pesticides/f?p=PPLS:1>.

National Response Center (NRC)

The National Response Center (NRC) at 800-424-8802 or 202-267-2675 or at website <http://nrc.uscg.mil> can provide guidance about methods for handling spills. Assistance can be obtained by contacting local Coast Guard stations, the Coast Guard district office or the National Spill Response Team.

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Appendix A: Spill Kit Contents

Proper handling of pesticide spills requires prior preparation of a spill kit containing directions for use if a spill incident should occur. The kits should be labeled and designated for use in handling pesticide spills only, and should be strategically placed where spills are most likely to occur. The label should list the contents, and the kit should be sealed to discourage pilferage.

Spill kits may be assembled by procuring items through the General Services Administration (GSA) Federal Supply System, or from commercial sources. Additional suppliers may be obtained by contacting the NAVFAC Applied Biologist or Command Entomologist.

Equipment required for pesticide facility and vehicle spill kits:

Facility kit	Vehicle kit
1 instruction sheet	1 instruction sheet
1 55-gallon open-head drum	1 5-gallon open-head drum
4 pairs of neoprene gloves	2 pairs of neoprene gloves
2 pairs of unvented goggles	1 pair of unvented goggles
2 respirators and cartridges (organic vapor)	1 respirator and cartridges (organic vapor)
2 aprons (chemical resistant)	1 apron (chemical resistant)
2 pairs of rubber boots	1 pair of rubber boots
2 pairs of coveralls	1 pair of coveralls
1 dustpan	1 dustpan
1 shop brush	1 shop brush
1 square-point "D" handle shovel	1 shop brush
1 dozen polyethylene bags w/ties (heavy ply)	6 polyethylene bags w/ties
1 18" push-broom, synthetic fibers	1 pint liquid detergent
1 gallon liquid detergent	10-30 lbs inert non-combustible
3 gallons household bleach	absorbent material (vermiculite, sand, clay granules)
80 lbs inert non-combustible absorbent material (vermiculite, sand, clay granules)	1 portable eyewash
1 bung wrench	blank labels
1 drum spigot	1 first aid kit
1 1-3/8" open-end wrench	
1 drum pump (manual)	
30 ft 1/2" polyethylene tubing or	
1 25-ft garden hose	
1 bung 2 1/2"	
1 bung 3/4"	
blank labels	
1 first aid kit	

Most equipment and materials needed for spill emergency response and for maintaining spill kits can be obtained through the Federal Supply System, GSA, or local companies.

Appendix B: Pesticide Incompatibilities

The tables below are compiled from information found in Section 10, stability and reactivity and incompatible materials, of the SDSs for the pesticides on the DoD List of Pest Management Materiel and the Contingency Pesticides List on the AFPMB website.

Fungicides	Incompatibilities
Azoxystrobin, 50% (Heritage)	None known.
Methylisothiocyanate (MITC-FUME)	Oxidizing material. Iron. Polyvinyl chloride (PVC). Rubber.
Triadimefon, 50% (Bayleton 50 WSP)	Strong oxidizing agents and acids.

Herbicides	Incompatibilities
Aminocyclopyrachlor 39.5%, chlorsulfuron 15.8% (Perspective)	No data available.
Aminocyclopyrachlor 39.5%, metsulfuron methyl 12.6% (Streamline)	No data available.
Aminocyclopyrachlor 22.8%, metsulfuron methyl 7.3%, Imazapyr 31.6% (Viewpoint)	No data available.
Aminopyralid, 40.6% (Milestone VM)	Avoid contact with strong oxidizers.
Bromacil, 21.9% lithium salt of bromacil, liquid (Hyvar X-L)	Acids and amines, especially primary amines.
Bromacil, 80%, wettable powder (Hyvar X)	Amines, particularly primary amines.
Diquat, 37.3%, water soluble liquid (Reward)	Strong alkalis and anionic wetting agents (e.g., alkyl and alkylaryl sulfonates). Corrosive to aluminum. Flammable hydrogen gas may be formed on contact with aluminum.
Diuron, minimum 80% diuron, granular (Diuron 80, Karmex DF)	Avoid contact with strong acids, strong bases and strong oxidizers.
Diuron-Bromacil mixture, 40% bromacil, 40% diuron, granular (Krovar DF, Alligare)	None known.
Fluridone, 5% pellets (Sonar SRP)	Reactive or incompatible with the following materials: oxidizing materials.
Fluridone, 41.7%, liquid (Sonar A.S.)	Reactive or incompatible with the following materials: oxidizing materials.
Imazapic, 23.6% liquid (Plateau)	Avoid contact with strong bases, strong acids, and strong oxidizing agents. Corrosive effect on zinc, iron and mild steel.

Herbicides	Incompatibilities
Isopropylamine salt of glyphosate	Strong oxidizing agents: bases and acids. Reacts with galvanized steel or unlined mild steel (except stainless steel) to produce hydrogen, a highly flammable gas that could explode.
Ammonium salt of glyphosate, 73.3% and 2.9% Diquat dibromide, water soluble liquid (Quik Pro)	Reacts with galvanized steel or unlined mild steel to produce hydrogen, a highly flammable gas that could explode.
Isopropylamine salt of imazapyr (Arsenal Powerline, Habitat)	Oxidizing agents, reducing agents. Corrosive effect on mild steel and brass.
Oryzalin, 40.4% (Surflan A.S.)	No materials to be especially mentioned.
Prometon, 25% prometon, emulsifiable concentrate (Pramitol 25E)	Strong acids.
Sulfometuron methyl, 75% (Oust XP)	No data available.
Tebuthiuron, 80% (Spike 80 DF)	No data available.
Tebuthiuron 1%, Diuron 3%, Granular (SprayKil SK-13)	Information not available.
Triclopyr, 60.45% (Garlon 4 Ultra)	Avoid contact with strong acids, strong bases, and strong oxidizers.
2,4-Dichlorophenoxy-acetic acid (2,4-D), oil miscible/water emulsifiable liquid (low volatile ester form)	Strong oxidizing agents: bases and acids.
2,4-Dichlorophenoxy-acetic acid (2,4-D), water soluble liquid (amine salt form)	Strong oxidizing agents: bases and acids.
2,4-Dichlorophenoxy-acetic acid (2,4-D), 0.128%, 0.22% MCPP and 0.05% Dicamba water soluble liquid (Weed-B-Gon MAX)	No specific data.

Insecticides	Incompatibilities
Abamectin	Can be hydrolyzed by strong caustic solution.
Acetamiprid 4.4% (End Zone Insecticide Stickers)	None known.

Insecticides	Incompatibilities
Aluminum phosphide	Water, acids, bases, strong oxidizing agents and strong reducing agents. Phosphine (hydrogen phosphide, PH ₃) gas may react with certain metals and cause corrosion, especially at higher temperatures and relative humidity. Metals such as copper, brass and other copper alloys, and precious metals such as gold and silver are susceptible to corrosion by phosphine. Small electric motors, smoke detectors, brass sprinkler heads, batteries and battery chargers, fork lifts, temperature monitoring systems, switching gears, communication devices, computers, calculators and other electrical equipment may be damaged by this gas. Phosphine (hydrogen phosphide, PH ₃) will also react with certain metallic salts and, therefore, sensitive items such as photographic film, some inorganic pigments, etc., should not be exposed.
<i>Bacillus thuringiensis</i> subspecies <i>israelensis</i> , 10.31% (Summit <i>B.t.i.</i> Briquets)	Strong bases and acids.
<i>Bacillus thuringiensis</i> , subspecies <i>israelensis</i> , strain AM 65-52, 2.8% (VectoBac GR)	None known.
<i>Bacillus thuringiensis</i> , subspecies <i>israelensis</i> , strain AM 65-52, 37.4% (VectoBac WDG)	None known.
Bifenthrin, 7.9% liquid (Talstar P Professional)	None known.
Bifenthrin, 0.2%, zeta-Cypermethrin 0.05%, granular (Talstar XTRA)	None known.
Boric Acid, 35.5%, aerosol (Perma-Dust)	None known.
Carbaryl, 43%, liquid (Carbaryl 4L)	Strong acids and bases.
Chlorfenapyr, 21.45% liquid (Phantom)	Strong oxidizing agents.
Beta-cyfluthrin, 11.8% (Tempo SC Ultra)	Alkalis and methanol.
Beta-cyfluthrin, 10% (Tempo Ultra WSP)	Bases and methanol.
Cyfluthrin, 0.1%, aerosol (Cy-Kick CS)	Strong oxidizing agents.
Lambda-cyhalothrin, 0.05% aerosol (PT 221L Pressurized Insecticide)	Strong oxidizing agents.

Insecticides	Incompatibilities
Lambda-cyhalothrin, 9.7% (Demand CS)	Oxidizing agents, alkalis, calcium hypochlorite.
Cypermethrin, 40% (Demon WP)	Oxidizing agents.
Deltamethrin	Strong oxidizing agents such as strong acids and strong bases, chlorates and nitrates.
Dichlorvos, 20% (Hot Shot No-Pest Strips, NUVAN Pro Strips)	Do not mix with other chemicals, avoid strong oxidizers, strong acids and strong bases.
Dichlorvos, 0.5% aerosol (NUVAN Directed Spray)	Strong oxidizing agents.
Dinotefuran, 0.5%, (z)-9-tricosene 0.04% (Quikstrike Fly Bait)	Strong oxidizers, strong acids.
D-Phenothrin, 2%, aerosol (Black Knight Roach Killer)	Avoid contact with alkali metals, alkaline earth metals, powdered metals and powdered metal salts.
D-Phenothrin, 0.125%, Prallethrin, 0.1% (Raid House and Garden Bug Killer)	Strong oxidizing agents.
Etofenprox 20% (Zenivex E20)	Strong oxidizing agents.
Etofenprox 1%, Pyrethrins 0.15%, Tetramethrin 0.5% and Piperonyl butoxide 1.5% (Zenprox Aerosol)	Strong acids, strong bases and oxidizing agents.
Fenoxycarb (Award Fire Ant Bait)	None known.
Fipronil	Strong acids, strong bases, strong oxidizing and reducing agents.
Hydramethylnon, 0.73% (Amdro Fire Ant Bait, PROBAIT Fire Ant Bait)	Strong acids, strong bases, and strong oxidizing agents.
(s)-Hydroprrene, 90.6% (Gentrol Point Source)	Store away from oxidizers.
(s)-Hydroprrene, 0.36% (Gentrol Aerosol)	Strong acids, strong bases, and oxidizing agents.
(s)-Hydroprrene, 9.0%, emulsifiable concentrate (Gentrol IGR)	Strong oxidizing agents.
Imidacloprid 0.05%, Beta-Cyfluthrin 0.025% (Temprid Ready-To-Spray)	Oxidizing agents.
Imidacloprid, 0.5%, (z)-9-tricosene 0.1% (Maxforce Granular Fly Bait)	No data available.
Imidacloprid, 10%, (z)-9-tricosene 0.1% (Maxforce Fly Spot Bait)	No data available.
Imidacloprid, 0.5% granular (Merit 0.5 g)	Aluminum and Diazomethane.

Insecticides	Incompatibilities
Imidacloprid, 0.025% (Kaput Rodent Flea Control Bait)	Avoid strongly alkaline materials.
Malathion, 57.0%, emulsifiable concentrate, class 2	Strong acids, strong bases and oxidizing agents. Malathion can corrode iron, steel, tin plate and copper.
Malathion, 96.5%, emulsifiable concentrate (Fyfanon ULV)	Strong alkalis, amines and strong oxidizing agents. The product can corrode iron, steel, tin plate and copper and is rapidly hydrolyzed at pH > 7.0.
Malathion, 40.9% (Fyfanon EW)	Strong alkalis, amines and strong oxidizing agents.
Methomyl, 1.1%, Fly Bait (Golden Malrin/Stimukil)	Strong acids, strong bases and oxidizing agents.
(s)-Methoprene, 2.1% (Altosid XR Briquets)	No data available.
(s)-Methoprene, 4.25% (Altosid Pellets)	Strong acids, strong bases and oxidizing agents.
(s)-Methoprene, 20% (Altosid Liquid Larvicide Concentrate)	Bleach, oxidizing/alkaline materials.
(s)-Methoprene 0.085%, permethrin 0.35%, phenothrin 0.3%, n-octyl bicycloheptene dicarboximide 2%, piperonyl butoxide 1.75% (Precor 2000 plus)	Strong acids, strong bases and oxidizing agents.
Mineral Oil, 10% (COCOBEAR)	Avoid contact with strong oxidizing agents, strong acids and strong bases.
Naled, liquid (Dibrom, Trumpet)	Strong oxidizing agents, strong acids and strong bases. Unstable in the presence of iron. Corrosive to aluminum and magnesium.
Naphthalene, 99.95%, ball form (Enoz Old Fashioned moth balls)	Oxidizing agents, acids.
Nithiazine, 1% Fly Strips (Quikstrike)	Store away from oxidizers.
Para-Dichlorobenzene, 99.9%, crystal/flake (Enoz Moth Ice Crystals)	Strong oxidizing agents, strong reducing agents.
Permethrin-Piperonyl Butoxide (4.6+4.6%), (Kontrol 4-4)	Strong oxidizers.
Permethrin 20.6%, Piperonyl Butoxide 20.6% (All Pro Aqualuer 20-20)	Strong oxidizers.
Permethrin 2% (Callington aircraft insecticide)	Avoid reaction with alkali metals, magnesium and magnesium alloys, zinc, aluminum alloys (2% magnesium). Avoid contact with plastics such as methacrylate polymers, polyethylene and polystyrene.

Insecticides	Incompatibilities
Permethrin 2%, D-Phenothrin 2% (Callington 1-Shot)	Avoid reaction with oxidizing agents.
Prallethrin 0.1% (Wasp Freeze II)	Strong oxidizing agents, strong acids, strong bases, alkali or alkaline-earth metals.
Pyrethrins, 3% pyrethrins with synergists, liquid (ULV fog concentrate)	Strong acids, strong bases and strong oxidizing agents.
Pyrethrin, 0.5%, piperonyl butoxide 1%, n-octyl bicycloheptene dicarboximide 1%, aerosol (PT 565 Plus XLO)	No substances known that should be avoided.
Resmethrin, 4.14%, Piperonyl butoxide 12.42% (Scourge)	Strong reducing agents and strong oxidizing agents.
Silicon dioxide as amorphous silica, 92.1% (CimeXa Dust)	No data available.
Spinosad, 11.6% (Conserve SC)	None known.
Sumithrin 10%, Piperonyl Butoxide, 10%, (Anvil 10+10 ULV)	Not compatible with strong acids and bases. Not compatible with oxidizing agents.
Tau-fluvalinate, 22.3%, Liquid (Mavrik Perimeter)	No data available.
Temephos 45% (ALLPro Provect 4E Larvicide)	Strong alkalis. Strong oxidizing agents.
Thyme oil, 4.1% (TyraTech Tech Dust Natural Insecticide)	Product may react with strong oxidizing agents.

Repellents	Incompatibilities
Clothing application, 40% permethrin, liquid (2-Gal sprayer)	Not compatible with strong acids or bases. Not compatible with strong oxidizers.
Clothing application, 0.5% permethrin, aerosol (Permethrin Arthropod Repellent)	None known.
Clothing application, permethrin 40% (IDA)	Strong oxidizing agents.
Clothing application, 0.5% permethrin, trigger spray (Sawyer premium insect repellent)	None known based on information supplied.
Personal application, 3% benzocaine, 10% precipitated sulfur (Chigg-Away)	None.
Personal application, Ultrathon (3M/EPA 58007-1)	None known.
Personal application, 30% DEET (Ultra 30)	None.

Repellents	Incompatibilities
Personal application, 25% DEET (Cutter Backwoods)	Do not mix with other chemical or oxidizers.
Personal application, 20% picaridin (Natrapel)	Oxidizing agents, acids, alkali metals, ammonia, peroxides, calcium hypochlorite, and reducing agents.
Personal application, 20% IR3535 (Bullseye)	Violent reactions possible with strong oxidizing agents.

Rodenticides	Incompatibilities
Anticoagulant, 0.005% Brodifacoum (Final All-Weather Blox, Talon-G)	Avoid strongly alkaline materials.
Anticoagulant, 0.005% Bromadiolone (Maki, Contrac Blox)	Avoid strongly alkaline materials.
Anticoagulant, 0.0025% Difethialone (First Strike Soft Bait)	None.
Anticoagulant, 0.005% Diphacinone (Ditrac, Ramik Bars)	Avoid strongly alkaline materials.
Anticoagulant, concentrate 0.106% sodium salt of diphacinone (LIQUA-TOXII)	Avoid strongly alkaline materials.
Anticoagulant, 0.02% Imidacloprid, 0.025% Warfarin (Kaput Combo Bait Pellets)	Avoid strongly alkaline materials.
10% zinc phosphide (ZP Tracking Powder)	Avoid water, acidic materials.

Surfactants	Incompatibilities
Spray Adjuvant, Limonene 75%, methylated vegetable oil 15%, alkyl hydroxypoly oxyethylene 10% (Cygnet Plus)	Strong acids and bases, including acidic clays, alkali metals, halogens, peroxides, vinyl chloride and iodine pentafluoride.
Spray Adjuvant, 100% d'limonene and related isomers plus selected emulsifiers (Cide-Kick II)	Strong acids and bases, including acidic clays, alkali metals, halogens, peroxides, vinyl chloride and iodine pentafluoride.
Spray Adjuvant, 100% d'limonene and related isomers plus selected emulsifiers (Cide-Kick)	Strong acids and bases, including acidic clays, alkali metals, halogens, peroxides, vinyl chloride and iodine pentafluoride.

Appendix C: Pesticide Decontaminants

Depending on the particular pesticide, chlorine bleach, caustic soda (lye, sodium hydroxide) or lime, or hard water detergent can be used to decontaminate most spills. Many pesticides, especially the organophosphate pesticides, decompose when treated with lye or lime. Fewer pesticides are decomposed by bleach (sodium hypochlorite). Other pesticides cannot be effectively decontaminated and should only be treated with detergent and water to help in removal. Some examples of common pesticides that can be decontaminated are listed below. This list was compiled from information found under Section 6 on accidental release measures, methods and materials for containment and cleaning up, of the SDSs for the pesticides found on the DoD List of Pest Management Materiel and Contingency Pesticide List on the AFPMB website:

Use lye or lime for:

Carbaryl
Malathion
Naled

Use soapy water for:

Bacillus thuringiensis
subspecies *israelensis*
Sodium salt of diphacinone

Do not use decontamination chemicals for pesticides not on these lists:

For most other dry pesticides, sweep up and place in suitable containers, then wash spill area with water.
For most other liquid pesticides, absorb with inert non-combustible absorbent materials (vermiculite, sand, clay granules, etc.). Refer to the product SDS for specific guidance.

Use bleach water and soap for:

Acetamiprid
Bifenthrin
Deltamethrin

Use hard water detergent for:

Aluminum phosphide – *NOTE: See special procedures in SDS.*
Azoxystrobin
Cypermethrin
Diquat dibromide
Fenoxycarb
Lambda-cyhalothrin

Use bleach and alcohol for:

Permethrin-Piperonyl
Butoxide

Use dilute ammonia and detergent for:

Dichlorvos

Cover with cold water:

Methylisothiocyanate

A practical guide for applying decontaminants is as follows:

<u>%A.I.</u>	<u>Amount Decontaminant needed</u>
1-10	Use an amount of decontaminant equal to the quantity of pesticide spilled.
11-79	Use an amount of decontaminant equal to 1.5 times the quantity of pesticide spilled.
80-100	The amount of decontaminant used should be twice the quantity of pesticide spilled.

WARNING: There is a potential for creating toxic by-products when using these procedures. In critical situations, samples of affected components (soil, sediment, water, etc.) should be taken and sent to a laboratory for analysis in order to determine if decontamination was successful.

Lye or Lime. Pesticides amenable to treatment using lye or lime may be decontaminated when mixed with an excess quantity of either of these materials. These materials can be used in either the dry form or in solution. A 10% solution of lye or lime can be made as follows:

Mixing directions: Mix 0.75 pounds of lye or lime in 3.5 quarts of water to make 1 gallon of 10% solution.

CAUTION: Caustic soda (lye) can cause severe eye damage to persons not properly protected. Protect against contact by wearing unventilated goggles, long-sleeved work clothes with coveralls, neoprene gloves, and chemical-resistant apron. An approved respirator should also be worn. Do not use lye on aluminum surfaces.

Bleach Treatment. Certain pesticides can be degraded by treatment with bleach (sodium hypochlorite). Generally, one gallon of household bleach, which contains approximately 5 percent sodium hypochlorite, should be used per pound or gallon of pesticide spilled. If bleaching powder is used, first mix it with water (one gallon of water per pound of bleach) and add a small amount of liquid detergent. For safety purposes, a preliminary test must be run using small amounts of bleach and the spilled pesticide. The reaction resulting from this test must be observed to make sure that the reaction is not too vigorous. Do not store near to, or mix chlorine bleach with amine-containing pesticides. Co-mingling of these materials can cause a violent reaction resulting in fire. Calcium hypochlorite is not recommended as a decontaminating agent because of the fire hazard.

Appendix D: Reportable Quantities for Major Pesticides

The following list is the reportable quantity (RQ) for many pesticides. Spills of pesticides that may enter waterways in quantities equal to or exceeding the RQ must be reported to the installation spill coordinator, the National Response Center at 1-800-424-8802, or to the appropriate EPA regional representative.

Spills involving mixtures of pesticides appearing on the list require reporting only when one or more of the materials in the mixture spilled equals or exceeds the RQ indicated for the specific pesticide and enters or threatens navigable water as defined in 40 CFR 117. The percentage of active ingredients in the specific pesticide product spilled and specific gravities of these materials, including carriers and/or diluents, should be used for determining RQs for each component. Refer to the complete EPA list of hazardous substances (40 CFR 116) for RQs for additional substances. Specific examples of calculations for determining reportable quantities are contained in this appendix.

The chart provided below can be used to convert percent active ingredients for emulsifiable concentrates to the approximate pounds of actual pesticide per gallon. This chart is provided for convenience and should be used only for purposes of providing initial estimates of spilled pesticide. It is not intended as a supplement to label information indicating pounds of actual pesticide per gallon.

Conversion table for active ingredients in Emulsifiable Concentrates (EC)

<u>Percent Active Ingredient</u>	<u>lbs/gal</u>
10-12	1
15-20	1.5
25	2
40-50	4
60-65	6
70-75	8
80-100	10

List of Reportable Quantities (RQs) for Major Pesticides

Many chemicals on the DoD List of Pest Management Materiel and Contingency Pesticide List are subject to reporting requirements under the Emergency Planning and Community Right-to-Know Act (EPCRA), also known as Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA), under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) and under section 112(r) of the Clean Air Act (CAA). The tables in this appendix are a reference to determine whether reporting is required under sections 302, 304, or 313 of EPCRA, or hazardous substance release notification under sections 102-103 of the CERCLA, and to determine whether they will be subject to accident prevention regulations under CAA section 112(r).

The tables below were compiled from the reportable quantities listed in Section 15, regulatory information, of the SDSs for the pesticides listed on the DoD List of Pest Management Materiel and Contingency Pesticide List, and from the EPA Consolidated List of Lists under EPCRA/CERCLA/CAA Section 112(r). It should be used as a reference tool only. A definitive source of compliance information for EPCRA is published in the Code of Federal Regulations (CFR), 40 CFR Parts 355, 370, and 372, Compliance information for CERCLA is published in 40 CFR Part 302 and Compliance information for CAA section 112(r) is published in 40 CFR Part 68.

Abbreviations used in the tables:

c — Although not listed by name and CAS number, this chemical is reportable under one or more of the EPCRA section 313 chemical categories.

EHS — Extremely Hazardous Substance

RCRA – Resource Conservation and Recovery Act

RQ — Reportable Quantity

TPQ — Threshold Planning Quantity—for chemicals that are solids, two TPQs may be given (e.g., 500/10,000). In these cases, the lower quantity applies for solids in powder form with particle size less than 100 microns, or if the substance is in solution or in molten form. Otherwise, the 10,000 pound TPQ applies.

TQ — Threshold Quantity

X — Indicates that this is a second name for an EPCRA section 313 chemical already included on this consolidated list. May also indicate that the same chemical with the same CAS number appears on another list with a different chemical name.

Fungicides	EPCRA (SARA)			CERCLA		CAA
	Section 302 (EHS) TPQ (lbs)	Section 304 EHS RQ (lbs)	Section 313	RCRA Waste Number	Section 102-103 RQ (lbs)	112(r) TQ (lbs)
Azoxystrobin, 50% (Heritage Fungicide)						
Methylisothiocyanate (MITC)	500	500	YES			
Triadimefon 50% (Bayleton 50 WSP)			YES			

Herbicides	EPCRA (SARA)			CERCLA		CAA
	Section 302 (EHS) TPQ (lbs)	Section 304 EHS RQ (lbs)	Section 313	RCRA Waste Number	Section 102-103 RQ (lbs)	112(r) TQ (lbs)
Aminocyclopyrachlor 39.5%, chlorsulfuron 15.8% (Perspective)			YES			
Aminocyclopyrachlor 39.5%, metsulfuron methyl 12.6% (Streamline)						
Aminocyclopyrachlor 22.8%, metsulfuron methyl 7.3%, Imazapyr 31.6% (Viewpoint)						
Aminopyralid, 40.6% (Milestone VM)						
Bromacil, 21.9% lithium salt of bromacil, liquid (Hyvar X-L)			YES			
Bromacil, 80%, wettable powder (Hyvar X)			YES			
Diquat, 37.3%, water soluble liquid (Reward)					1,000	
Diuron, minimum 80% diuron, granular (Diuron 80, Karmex DF)			YES		100	
Diuron-Bromacil mixture, 40% bromacil, 40% diuron, granular (Krovar DF, Alligare)			YES		100	
Fluridone, 5%, pellets (Sonar SRP)						
Fluridone 41.7% liquid (Sonar A.S.)						
Imazapic 23.6% liquid (Plateau)						
Isopropylamine salt of glyphosate, 41%, water soluble liquid (Roundup Pro/Glypos Pro/Glypro Plus)						
Isopropylamine salt of glyphosate, 53.8%, water soluble liquid (Rodeo/Roundup Custom)						
Isopropylamine salt of glyphosate, 2.0%, water soluble liquid (Roundup Ready-to-Use)						
Ammonium salt of glyphosate, 73.3% and 2.9% Diquat dibromide, water soluble liquid					1,000	

Herbicides	EPCRA (SARA)			CERCLA		CAA
	Section 302 (EHS) TPQ (lbs)	Section 304 EHS RQ (lbs)	Section 313	RCRA Waste Number	Section 102-103 RQ (lbs)	112(r) TQ (lbs)
Isopropylamine salt of imazapyr, 26.7% (Arsenal Powerline)						
Isopropylamine salt of imazapyr, 27.7% (Habitat)						
Oryzalin, 40.4% (Surflan A.S.)			YES			
Prometon, 25% prometon, emulsifiable concentrate (Pramitol 25E)						
Sulfometuron methyl, 75% (Oust XP)						
Tebuthiuron 80% (Spike 80 DF)			YES			
Tebuthiuron 1%, Diuron 3%, Granular (SprayKil SK-13)			YES		100	
Triclopyr, 60.45% (Garlon 4 Ultra)						
2,4-Dichlorophenoxy-acetic acid (2,4-D), oil miscible/water emusifiable liquid (low volatile ester form)			YES	U240	100	
2,4-Dichlorophenoxy-acetic acid (2,4-D), water soluble liquid (amine salt form)				U240	100	
2,4-Dichlorophenoxy-acetic acid (2,4-D), 0.128%, 0.22% MCPP and 0.05% Dicamba water soluble liquid (Weed-B-Gon MAX)			YES	U240	100	

Insecticides	EPCRA (SARA)			CERCLA		CAA
	Section 302 (EHS) TPQ (lbs)	Section 304 EHS RQ (lbs)	Section 313	RCRA Waste Number	Section 102-103 RQ (lbs)	112(r) TQ (lbs)
Abamectin, 0.011%, (Advance 360A Dual Choice Ant Bait Stations)			YES			
Abamectin, 0.05% (Avert Dry Flowable Cockroach Bait Formula 1)			YES			
Abamectin, 0.05% (Avert Cockroach Bait Stations Formula 1)			YES			
Acetamiprid, 4.4% (End Zone Insecticide Stickers)						
Aluminum phosphide, 55% tablets (Phostoxin/Fumitoxin)	500	100	YES	P006	100	
Aluminum phosphide, 55% pellets (Phostoxin/Fumitoxin)	500	100	YES	P006	100	
<i>Bacillus thuringiensis</i> subspecies <i>israelensis</i> , 10% (Summit <i>B. t. i</i> Briquets)						
<i>Bacillus thuringiensis</i> strain AM 65-52, 2.8% (VectoBac GR)						
<i>Bacillus thuringiensis</i> , subspecies <i>israelensis</i> strain AM 65-52, 37.4% (VectoBac WDG)						
Bifenthrin, 7.9% liquid (Talstar P Professional)			YES			
Bifenthrin 0.2%, zeta-cypermethrin 0.05%, granular (Talstar XTRA)			YES			
Boric Acid, 35.5%, aerosol (Perma-Dust)						
Carbaryl, 43%, liquid (Carbaryl 4L)			YES	U279	100	
Chlorfenapyr, 21.45% liquid (Phantom)						
Beta-cyfluthrin, 11.8% (Tempo SC Ultra)			YES			
Beta-cyfluthrin, 10% (Tempo Ultra WSP)			YES			
Cyfluthrin, 0.1%, aerosol (Cy-Kick CS)			YES			
Lambda-cyhalothrin, 0.05% aerosol (PT 221L Pressurized Insecticide)			YES			
Lambda-cyhalothrin, 9.7% (Demand CS)			YES			
Cypermethrin, 40% (Demon WP)						
Deltamethrin, 0.03% (Kills Bedbugs II)						
Deltamethrin, 0.05% (Delta Dust)						
Deltamethrin, 0.1%, granular (DeltaGard G)						
Deltamethrin, 0.06%, aerosol (D-Force Insecticide)						

Insecticides	EPCRA (SARA)			CERCLA		CAA
	Section 302 (EHS) TPQ (lbs)	Section 304 EHS RQ (lbs)	Section 313	RCRA Waste Number	Section 102-103 RQ (lbs)	112(r) TQ (lbs)
Dichlorvos, 20% (Hot Shot No-Pest Strips, NUVAN Pro Strips)	1000	10	YES			
Dichlorvos, 10.75% (Ovitrap Mosquito Trap-N-Kill)	1,000	10	YES		10	
Dichlorvos, 0.5%, aerosol (NUVAN Directed Spray)	1,000	10	YES		10	
Dinotefuran, 0.5%, (z)-9-tricosene 0.04% (Quikstrike Fly Bait)						
D-Phenothrin, 2%, aerosol (Black Knight Roach Killer)			YES			
D-Phenothrin, 0.125%, Prallethrin, 0.1% (Raid House and Garden Bug Killer)			YES			
Etofenprox 20% (Zenivex E20)						
Etofenprox 1%, Pyrethrins 0.15%, Tetramethrin 0.5% and Piperonyl butoxide 1.5% (Zenprox Aerosol)			YES		1	
Fenoxycarb (Award Fire Ant Bait)			YES			
Fipronil, 0.0143% (Topchoice Fire Ant Granules)						
Fipronil, cockroach (Combat MAX Kill)						
Fipronil (Maxforce FC Roach Killer Bait Gel)						
Fipronil (Maxforce FC Ant Killer Bait Gel)						
Fipronil (MaxForce FC Ant Bait)						
Fipronil (Termidor 80WG)						
Fipronil (Termidor SC)						
Hydramethylnon (Amdro Fire Ant Bait, PROBAIT Fire Ant Bait)			YES			
(s)-Hydropene, 90.6% (Gentrol Point Source)						
(s)-Hydroprene, 0.36% (Gentrol Aerosol)						
(s)-Hydroprene, 9.0%, emulsifiable concentrate (Gentrol IGR)						
Imidacloprid 0.05%, Beta-Cyfluthrin 0.025% (Temprid Ready-To-Spray)						
Imidacloprid 0.5%, (z)-9-tricosene 0.1% (Maxforce Granular Fly Bait)						
Imidacloprid 10%, (z)-9-tricosene 0.1% (Maxforce Fly Spot Bait)						

Insecticides	EPCRA (SARA)			CERCLA		CAA
	Section 302 (EHS) TPQ (lbs)	Section 304 EHS RQ (lbs)	Section 313	RCRA Waste Number	Section 102-103 RQ (lbs)	112(r) TQ (lbs)
Imidacloprid, 0.5% granular (Merit 0.5 g)						
Imidacloprid, 0.025% (Kaput Rodent Flea Control Bait)						
Malathion, 57.0%, emulsifiable concentrate, class 2			YES		100	
Malathion, 96.5%, emulsifiable concentrate (Fyfanon ULV)			YES		100	
Malathion, 40.9%, (Fyfanon EW)			YES		100	
Methomyl 1.1%. Fly Bait, (Golden Malrin/Stimukil)	500/10,000	100		P066	100	
(s)-Methoprene, 2.1% (Altosid XR Briquets)						
(s)-Methoprene, 4.25% (Altosid Pellets)						
(s)-Methoprene, 20% (Altosid Liquid Larvicide Concentrate)						
(s)-Methoprene 0.085%, permethrin 0.35%, phenothrin 0.3%, n-octyl bicycloheptene dicarboximide 2%, piperonyl butoxide 1.75% (Precor 2000 Plus)			YES			
Mineral Oil, 10% (COCOBEAR)						
Naled, liquid (Dibrom, Trumpet)			YES		10	
Naphthalene, 99.95%, ball form (Enoz Old Fashioned moth balls)			YES	U165	100	
Nithiazine, 1% fly strips (Quikstrike)						
Para-Dichlorobenzene 99.9%, crystal/flake (Enoz Moth Ice Crystals)			YES	U072	100	
Permethrin-Piperonyl Butoxide (4.6+4.6%) , (Kontrol 4-4)			YES			
Permethrin 20.6%, Piperonyl Butoxide 20.6% (All Pro Aqualuer 20-20)			YES			
Permethrin 2% (Callington aircraft insecticide)			YES			
Permethrin 2%, D-Phenothrin 2% (Callington 1-Shot)			YES			
Prallethrin 0.1% (Wasp Freeze II)						
Pyrethrins, 3% pyrethrins with synergists, liquid (ULV fog concentrate)			YES		1	
Pyrethrins 0.5%, piperonyl butoxide 1%, n-octyl bicycloheptene dicarboximide 1%, aerosol (PT 565 Plus XLO)			YES		1	
Resmethrin 4.14%, Piperonyl butoxide 12.42% (Scourge)			YES			

Insecticides	EPCRA (SARA)			CERCLA		CAA
	Section 302 (EHS) TPQ (lbs)	Section 304 EHS RQ (lbs)	Section 313	RCRA Waste Number	Section 102-103 RQ (lbs)	112(r) TQ (lbs)
Silicon dioxide as amorphous silica, 92.1% (CimeXa Dust)						
Spinosad, 11.6% (Conserve SC)						
Sumithrin 10%, Piperonyl Butoxide 10%, (Anvil 10+10 ULV)			YES			
Tau-fluvalinate 22.3%, Liquid (Mavrik Perimeter)			YES			
Temephos 45% (ALLPro Provect 4E Larvicide)			YES			
Thyme oil, 4.1% (TyraTech Tech Dust Natural Insecticide)						

Repellents	EPCRA (SARA)			CERCLA		CAA
	Section 302 (EHS) TPQ (lbs)	Section 304 EHS RQ (lbs)	Section 313	RCRA Waste Number	Section 102-103 RQ (lbs)	112(r) TQ (lbs)
Clothing application, 40% permethrin, liquid (2-Gal sprayer)			YES			
Clothing application, 0.5% permethrin, aerosol (Permethrin Arthropod Repellent)			YES			
Clothing application, permethrin 40% (IDA)			YES			
Clothing application, 0.5% permethrin, trigger spray (Sawyer premium insect repellent)			YES			
Personal application, 3% benzocaine, 10% precipitated sulfur (Chigg Away)						
Personal application, Ultrathon (3M/EPA 58007-1)						
Personal application, 30% DEET (Ultra 30)						
Personal application, 25% DEET (Cutter Backwoods)						
Personal application, 20% picaridin (Natrapel)						
Personal application, 20% IR3535 (Bullseye)						

Rodenticides	EPCRA (SARA)			CERCLA		CAA
	Section 302 (EHS) TPQ (lbs)	Section 304 EHS RQ (lbs)	Section 313	RCRA Waste Number	Section 102-103 RQ (lbs)	112(r) TQ (lbs)
Anticoagulant, 0.005% Brodifacoum (Final All-Weather Blox, Talon-G)						
Anticoagulant, 0.005% Bromadiolone (Maki, Conrac Blox)	100/10,000	100				
Anticoagulant, 0.0025% Difethialone (First Strike Soft Bait)						
Anticoagulant, 0.005% Diphacinone (Ditrac, Ramik Bars)	10/10,000	10				
Anticoagulant, concentrate 0.106% sodium salt of diphacinone (LIQUA-TOXII)	10/10,000	10				
Anticoagulant, 0.02% Imidacloprid, 0.025% Warfarin (Kaput Combo Bait Pellets)	500/10,000	100	X YES c	P001	100	
10% zinc phosphide (ZP Tracking Powder)						

Surfactants	EPCRA (SARA)			CERCLA		CAA
	Section 302 (EHS) TPQ (lbs)	Section 304 EHS RQ (lbs)	Section 313	RCRA Waste Number	Section 102-103 RQ (lbs)	112(r) TQ (lbs)
Spray Adjuvant, Limonene 75%, methylated vegetable oil 15%, alkyl hydroxypoly oxyethylene 10% (Cygnet Plus)						
Spray Adjuvant, 100% d'limonene and related isomers plus selected emulsifiers (Cide-Kick II)						
Spray Adjuvant, 100% d'limonene and related isomers plus selected emulsifiers (Cide-Kick)						

Afterword

The first edition of this TG was published as Technical Information Memorandum (TIM) No. 15 in September 1980. It was prepared by the AFPMB Ad Hoc Committee on Pesticide Spill Prevention. Committee members were Maj J. Michael Livingston, Chairman, Dr. Edward S. Evans, LCDR Timothy H. Dickens, LTC James M. Neely, and Dr. J. Richard Gorham. The basis for the TIM was a draft Navy manual entitled "Pesticide Spill Prevention and Cleanup," prepared by the Naval Environmental Support Office, Port Hueneme, California.

The June 1992 second edition was updated through the efforts of the Armed Forces Pest Management Board Pesticides and Equipment committees. The Real Property Committee, chaired by Mr. William Gebhart, provided technical assistance and guidance for the revision.

The August 2009 third edition was updated by the AFPMB Real Property Committee, chaired by Mr. Frederick J. "Jim" Harrison, with the Pesticides Committee, chaired by Mr. Clifford Myers, providing technical assistance and guidance.