

# **Armed Forces Pest Management Board**

## **TECHNICAL GUIDE NO. 7**

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### **INSTALLATION PESTICIDE SECURITY**

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# **INSTALLATION PESTICIDE SECURITY**

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## **INTRODUCTION**

The ideas and technology presented in this guide constitute an attempt to improve all aspects of pest management security following the attacks of September 11, 2001. This document is designed to inform command and staff personnel on military installations about potential security problems related to pest management, including storage and transportation of pesticides (toxic substances), application of pesticides, sale and distribution of pesticides, and public health and agricultural implications. Measures to safeguard pesticides and pesticide application equipment are discussed as they relate to installation security. Finally, information on the toxicity of pesticides and basic first aid measures associated with pesticide exposure or poisoning are provided. Each installation should evaluate the information presented in this guide with respect to its own pest management programs, the security measures already in place, the likelihood of an adverse event, and the impact that such an event would have on ongoing missions. Pest management security should be based on potential threats - not on past experiences.

## **THREAT**

### **1. Death and Destruction.**

a. Although the intentional misuse of concentrated pesticides to cause illness or death is considered to be a “low probability, high impact” event, it must be seriously considered as part of overall installation security. Pesticides are toxic substances that are designed to kill living organisms. Toxicity ranges from very deadly (a taste or drop can kill a human) to practically nontoxic to people and other animals. Pesticides may be applied, against their intended use, to the air people breathe, may adulterate food and water, or may contaminate surfaces or objects that people contact. Pesticides are a potential terrorist tool and in some cases could be delivered to an unsuspecting population through delivery systems used in normal pest management operations. Information on safeguarding aerial application of pesticides is provided in Appendix A. Information on the toxicity of pesticides and first aid measures in the event of pesticide poisoning is provided in Appendices B and C, respectively.

(1) There are numerous highly toxic chemical pesticides available on the open market that could be used as low-tech chemical warfare (CW) agents by terrorists or foreign military forces. A commercial tetramine-based rat poison used in Nanjing, China, on 14 September 2002 accidentally killed 41 people and made more than 400 other people seriously ill. Chemical insecticides and herbicides, such as malathion, sumithion, DDT and dimecron, which are used by farmers in Africa and Asia for poisoning problem wildlife (e.g., elephants, tigers, monkeys, birds), could also be employed for clandestine attacks against U.S. soldiers participating in contingency operations.

(2) Bulk pesticide stockpiles in foreign countries could be used by terrorists as ready sources of CW weapons ordnance. In Africa, there are an estimated 50,000 tons of obsolete pesticides, most of which is stored in unsecured or poorly secured facilities that could be targeted by Al Qa'ida or other terrorist groups as a low-cost/readily accessible source of toxic CW ordnance. Ethiopia, a country that has been subject to terrorist attacks from Al Qa'ida-affiliated groups in neighboring Somalia, has a stockpile of more than 3,000 tons of obsolete pesticides currently awaiting clean-up and disposal by international aid organizations.

b. Pesticide sprayers can be used to disperse biological agents as well as pesticides. On installations, people who are otherwise familiar with pest controllers and their equipment might be caught off guard if biological agents were being dispersed.

c. Insects or other arthropods may be used to spread diseases to crops and animals. This can have a devastating effect on food supplies, leading to shortages and economic hardship. Insects or other arthropods may be used to transmit human diseases. For example, mosquitoes or fleas could be infected with a pathogen and subsequently released at a specific location. The sudden, unexplained appearance of vector-borne diseases would cause immediate alarm or hysteria. On the other hand, if the disease organisms carried by these insects were known to occur in the area,

then the appearance of sick or dead animals or people might seem to be a natural phenomenon. This scenario is much more insidious than the preceding and would likely not be immediately identified by local public health personnel.

**2. Demoralization.** The sudden onset of disease, environmental damage, or poisonings would disrupt the normal lives of personnel working, training, or residing in a community. People might lose faith in the ability of government agencies to cope with the situation and might fear future attacks.

### **3. Destruction of Infrastructure.**

a. Pesticides applied to water supplies or wells are perhaps of greatest concern. Low-grade sickness or death would create confusion on an installation and disrupt its mission. Costs would be substantial, in terms of both time and money.

b. Concentrated pesticides released into sensitive buildings would harm occupants and disrupt operations. Major headquarters, communications facilities, hospitals and clinics, and child development centers are examples of high-use buildings that could remain closed for considerable periods of time until decontamination was effected.

c. Pesticides or disease organisms may also be used to destroy valuable or historic plants or damage the lawns and shrubs that beautify an installation. Trees that may have taken centuries to grow could be killed in a matter of days or weeks. Although such incidents are rare, cases are known where trees of historical value were intentionally killed with herbicides. This indirectly affects the mission through loss of morale and trust.

### **4. Disruption.**

a. Medical services may be overloaded during a mass pesticide poisoning incident or intentional disease outbreak.

b. Government services, such as fire, police and public health, may also be overloaded when dealing with mass poisoning incidents, vandalism, or fires involving pesticides. Public health personnel may not be able to provide timely response to large-scale disease outbreaks.

c. Major traumatic events may create economic chaos. Diversion of funds to deal with unplanned events (poisonings, disease, pesticide spills and fires) may result in budget shortfalls in other critical areas.

d. Theft, vandalism, or sabotage of stored pesticides can disrupt ongoing pest management operations and cost the government money. Theft of pesticides, particularly herbicides that often cost more than \$100/gallon, can have an adverse impact on the budget and may delay timed applications during the repurchase process. Security of pesticides used in agriculture should be especially tight at installations near agricultural areas. Vandalism or sabotage may delay the

provision of quality pest management services on the installation until facilities, supplies, and equipment are replaced or repaired.

**5. Distrust.** Incidents of pesticide poisoning, environmental damage, or sudden outbreaks of disease may lead to panic and suspicion by the general public. While a certain amount of skepticism and caution is healthy, fear related to everyday events will have an adverse impact on people's lives.

## PHYSICAL SECURITY

1. Pesticides and pesticide application equipment must be properly stored and safeguarded. Pesticides may be found in a variety of facilities and locations on a military installation. Pest control shops may be operated by public works, golf courses, greenhouses, natural resource departments, agricultural out-leases, or others.

2. Pest control shops include storage areas for chemicals and application equipment. Information on security features for pest control shops can be found in Armed Forces Pest Management Board Technical Guide No. 17, Military Handbook, Design Criteria for Pest Control Facilities. Extracts from this document are summarized in the following discussion.

a. Facilities should be sited in areas where the potential for pesticide fires would have a minimal impact on surrounding installation facilities, such as housing areas, hospitals, and child development centers. However, once this aspect has been considered, placement of a pest control facility should be viewed with security in mind. The facility should be placed in an open, well-lighted area easily accessible to security personnel. This is particularly important when pesticides are stored outside in hazardous material lockers.

b. The perimeter of the facility must be secure.

(1) Because of the hazardous nature of various pesticides (e.g., insecticides, acaricides, herbicides, rodenticides, fungicides, wood preservatives, avicides, nematocides, and molluscicides) stored and mixed in pest management facilities, it is essential that such materials be secured and available only to qualified individuals. Security fencing and security gates and other measures are essential. A climb-resistant fence must enclose the entire facility. If other security measures are taken, such as security devices on the windows, fencing must enclose the vehicle storage area and outside mixing areas. Design review must include installation security requirements. [2.8 Safety/Security, AFPMB TG 17]

(2) Provide a climb-resistant chain link fence to prevent unauthorized entry. The fence must be a minimum of 7 feet (2.13 m) high, without top rail. Also, the fence fabric must be twisted and barbed at the top and bottom. Refer to NFGS-02831, Fence, Chain Link for detailed criteria. Security gates to the fence must be kept locked. [3.4.6 Security Fencing and Gates, AFPMB TG 17]

(3) Exterior lighting should be used to illuminate all areas within the fenced area. Particular attention should be directed toward eliminating any dark spots or shadows, especially where there are doors or windows. The lighting should be timer controlled.

(4) Video cameras should be considered for use at facilities on remote sites or facilities with large quantities of pesticides that pose a significant risk to the community as a result of theft, vandalism, or sabotage. Cameras should be tied into the main installation security office,



where surveillance can be performed during non-duty hours. Since pesticides stored in outdoor hazardous material containers do not usually have the same level of security as storage areas contained within locked facilities, cameras can afford timely intervention by security personnel in case unauthorized entry occurs.

(5) Alarm systems should be installed on windows and doors, including the doors of hazardous material containers. The alarm system can be tied into the main installation security office.

c. Install self-locking and self-closing exterior doors to prevent unauthorized entry. [3.1.5.3.1 Doors, AFPMB TG 17] Interior doors to pesticide storage areas should also be locked to prevent unauthorized access during normal duty hours and to prevent entry during non-duty hours. Locks on doors of hazardous material containers used for pesticide storage should be case hardened and of sufficient size to preclude easy tampering or destruction. For those facilities where Class I poisons (those marked “DANGER, POISON” and bearing a skull and crossbones) are kept in large quantities, access should be restricted. This can be done by issuing magnetic cards permanently logged into a security system or by providing coded cipher locks on facility doors. Class I poisons should be segregated from other less toxic pesticides in separate locked cabinets or rooms.

d. Equip windows with interior security mesh if the facility is not enclosed (surrounded) by a climb-resistance chain link (security) fence and security gates. As an alternative, do not provide windows. [3.1.5.3.3 Windows, AFPMB TG 17] Security mesh should be used on all windows at facilities located on remote sites or facilities with large quantities of pesticides that may pose a significant risk to the community as a result of theft, vandalism, or sabotage.

e. Secure pesticide dispersal equipment when not in use. Vehicles should be identified and registered with the security office. Sprayers should be disabled if left outdoors—this can be done by using a removable startup device or equipping the sprayers to operate only when activated by a PIN or magnetized card. Pesticides should be removed from vehicles during non-duty hours if they are left outdoors. Serial numbers of all spray equipment should be recorded, with a copy kept on file at the security office.

f. Post the names, addresses and telephone numbers for contact persons at the primary entrance to the storage area (list at least two people, if possible). Indicate location of the nearest accessible telephone. Post all storage areas to indicate pesticide storage: “DANGER, POISON, PESTICIDE STORAGE” and “UNAUTHORIZED PERSONS KEEP OUT”. Signs should be bilingual, if applicable.

3. Pesticides are often transported from secured storage locations to job sites for mixing and application. All pesticides must be stored in locked containers affixed to the vehicle. This can be accomplished through the use of utility compartments built into the vehicle or secured to the bed by aftermarket installation.

## **OPERATIONAL SECURITY**

1. Despite all the precautions taken to secure pesticides stored on the installation, a threat still exists when pesticides are removed from storage and applied in the air, in water, on land, or in buildings. Pesticides may be applied by in-house Government or contract pest controllers that maintain pest control shops on the installation, by contract pest controllers who bring pesticides and application equipment onto the installation, or by individuals living in family housing. This section addresses those measures that can be taken to ensure that all pesticides and pesticide sprayers sited on the installation or those that are brought in from the civilian community are used correctly.

2. With few exceptions, like personal protection and self-help, all personnel applying pesticides on installations must be certified by DoD or the state in which they work. Checking the certification status of the pest controller provides a certain measure of confidence that the individual is competent to apply pesticides. In addition, all individuals applying pesticides should be positively identified. The following guidance is provided to ensure that only qualified/verified personnel apply pesticides on installations.

a. The identity of all Government and contract pesticide applicators must be validated through Government or contract pest control records available at the Pest Management Coordinator's (PMC) office. In addition, in-house pest controllers should have Government-approved ID cards. Verifying the certification status of contractors coming onto the installation is more difficult. A driver's license (picture ID) is required at nearly all installations to gain access. In addition, security personnel manning entry gates should have a list of individuals authorized to perform pest control operations on the installation. This list can be furnished by the PMC following coordination with tenant commands and their contracted pest control services. This assures that all pesticide applications are preapproved and that no unannounced pesticide applicators can gain access. Each applicator entering the installation should have a valid work order indicating the dates of service requested, the name and phone number of a point of contact on the installation, and a name and phone number of a supervisor at the sponsoring organization/company performing the work.

b. Contract specifications should require that all vehicles carrying pesticides be identified with company logos or placards. Government vehicles, as well as those used by contractors, must be readily identifiable. Signs should be affixed to sprayers towed behind vehicles to indicate that they contain pesticides.

c. Personnel applying pesticides should wear readily identifiable work uniforms with logos depicting the sponsoring Government section or private company. Photo ID cards should be worn on the outside of the uniform during working hours.

3. All pesticide applicators should be trained in security awareness. The individual should understand how to safeguard pesticides and application equipment in the community, who to

contact in an emergency, and where to report incidents of theft, vandalism, or sabotage. This is especially important for contract personnel coming onto the installation to do work.

4. Unauthorized personnel should not have access to stored pesticides or application equipment. Pesticide storage facilities should remain locked when not in use. Double locks or locks that are protected by a steel shroud may be used for increased security. Visitors to these facilities should sign in on a written log and should be escorted while in the building.

5. Inventories of pesticides and application equipment should be made at least quarterly. Copies of these inventories should be forwarded to the PMC, emergency first responders, fire department, medical emergency room or treatment facility, and the security office.

6. Pesticide application equipment used on the installation to deliver large volumes of pesticides (e.g., sprayers with a capacity of 100 gallons or greater) may be outfitted with a Smart GPS system that renders the sprayer inoperable in or over untargeted areas.

7. Pesticide sprayers should be drained of their contents prior to storing the equipment outside. Keys to pesticide sprayers, tractors and trucks should be removed when not in use and stored in a locked container secured inside a building at the end of the workday. Pesticide application equipment should also be secured to prevent unauthorized use. Equipment should be disabled to prevent unauthorized use. Fill hatches should be secured to prevent persons from dumping contaminants into sprayers. Application equipment should be checked for evidence of tampering prior to use.

8. Radios or cell phones should be available to all pesticide applicators when away from their shop, so that they can communicate with their home base or emergency personnel.

9. Accurate records must be kept of all pesticide applications, regardless of site. This applies to all pest control operations on the installation, with the exception of personal protection and authorized self-help efforts. Pesticide application records should be recorded on IPMIS, DD Form 1532-1, or another approved format. Records should be consolidated at no more than two separate locations identified by the PMC. This facilitates rapid checking of authorized pesticide applications and helps to identify unauthorized applications.

10. Notification of outdoor pesticide applications should be provided to the security office whenever these operations involve misting, fogging, or high-volume spraying. This informs security personnel of authorized applications and alerts them to potentially unauthorized applications. A copy of the notification should be also given to the PMC. Whenever large-scale pesticide applications are programmed (e.g., mosquito fogging, aerial application, tree and shrub spraying), the public should be notified through the installation newspaper or TV channel and a notice should be posted in conspicuous public areas in the vicinity of the proposed application. Aerial spray applications require a minimum of 24 hours public notice. This is particularly important when aircraft spraying is conducted, since the general public is very apprehensive about low-flying aircraft or aircraft dispersing chemicals, including pesticides.

11. Aerial application of pesticides on military installations poses additional security risks due to the high volume of pesticides that can be delivered over a large area in a short period of time. Aircraft used in aerial application operations are often staged and loaded with pesticides at a location off the installation, where access by non-DoD personnel is much easier. All aircraft conducting aerial application on the installation should be equipped with transponders for in-flight aircraft identification. All pesticide applications by air must be documented in preapproved aerial validation plans. A DoD PMC must approve aerial spray validation plans and must be present at the loading site. Additional information on safeguarding aerial application of pesticides can be found in Appendix A.

## **PUBLIC HEALTH AND AGRICULTURE**

1. The military may not be a direct target of unauthorized introductions of disease vectors or pests that could severely damage crops, livestock, or other desirable plants or animals; however, identification of newly found pests or a significant increase in existing pests should be monitored and evaluated on military installations.
2. Pest management and medical personnel should be aware of pest species on the installation, their seasonality, and relative numbers. Whenever a new pest is encountered, coordination should occur with local and national pest management and public health experts to ascertain if it is a new introduction. Military personnel may also play a part in surveillance, both on and off the installation, if local resources are inadequate to identify the type or extent of a pest introduction that may impact the health or economy of the area. Military personnel are often the first individuals to identify newly introduced pests in areas where dedicated pest surveillance is otherwise absent or inadequate.
3. Documentation of existing pest problems can be found in installation pest management plans. Surveillance and control procedures should describe the types of pests normally found as well as their impact on ongoing operations and programs. The plan should also address measures to be taken in the event of a disease outbreak or the introduction of an economic pest on the installation. Points of contact should be listed for local and national experts who can be notified in the event of an outbreak or who can provide advice and consultation on surveillance and control strategies.
4. Military personnel should be aware that pests harmful to the health or economy of the United States can be accidentally or intentionally brought into the country from overseas areas. Programs should already be in place to ensure that quarantined pests are removed or killed before deployment back to CONUS. Pest management personnel should make sure that inspections and control procedures are maximized for equipment and cargo leaving an overseas area and arriving at its final military destination. Personnel at military installations subject to frequent deployment/redeployment or where incoming cargo or other materiel is an ongoing part of the mission should coordinate their activities with the U. S. Department of Agriculture (USDA) and Centers for Disease Control and Prevention (CDC).
5. DoD Entomologists and allied pest management professionals maintain skills and equipment to protect people and property. Military units and personnel are positioned to evaluate potential outbreaks of disease and destruction of property on military installations, in the surrounding civilian communities, and in deployed overseas areas. Many of these personnel perform routine support missions at their home stations but can be called upon to provide expertise during disasters (e.g., release of disease vectors or agricultural pests).

## **SALE AND DISTRIBUTION OF PESTICIDES**

1. Pesticides may also be sold or distributed on military installations at the following facilities:

- a. Post Exchange - sale.
- b. Commissary - sale.
- c. Family Housing Self-Help - distribution.
- d. Veterinary Clinic - sale or distribution.
- e. HAZMART (Hazardous Materials Supply Point) - distribution.
- f. Defense Reutilization and Marketing Office - sale or distribution.

g. Deployable military units – pesticides stored in unit areas are not offered for sale or distribution but should nonetheless be considered when evaluating the extent of toxic materials stored on the installation in facilities not involved in day-to-day pest control.

2. Pesticides comprise a wide variety of different chemicals that are regulated together under FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act). While these chemicals are not the only compounds that can harm or kill people, animals, or desirable plants, they are readily identifiable through Federal labeling. This does not prevent misuse, but information on the label may aid in identification of the product after a pesticide-related incident. The chart found in Appendix B shows the signal words found on pesticide labels that are associated with various levels of acute toxicity. Appendix C provides information on first aid for pesticide poisoning. Material Safety Data Sheets may give additional information on the acute toxicity and other adverse effects of pesticides and are usually found at the facilities where pesticides are stored or at the installation safety office.

3. None of the facilities listed above should store, sell, or distribute Restricted Use (the words “Restricted Use” are found on the label) or Class I pesticides (those bearing the words DANGER, POISON and a skull and crossbones). Restricted Use pesticides can only be purchased by State- or DoD-certified individuals who present proper credentials. Some Class I pesticides, such as certain rodenticides, may be legally purchased without the certification requirement. However, these compounds are so toxic that very minute amounts can kill a human or animals. The consequences of misuse, either accidental or intentional, can be severe.

4. Pesticide storage and display areas in these facilities should be secure when the facilities are closed. An inventory of all Class II pesticides (those bearing the word WARNING on the label) should be maintained, with copies forwarded to the emergency first responders, fire department, medical emergency room or treatment facility, and the security office. Pesticides should be sold or distributed only to authorized personnel possessing proper identification.

## **COMMUNICATION AND RESOURCES**

1. The Pest Management Coordinator (PMC) should be aware of all pesticides stored, used, or sold/distributed on the installation. The PMC serves as the focal point for the command on pesticide security issues. The PMC can accomplish this task through access to inventories and records, contract documents, and site visits. The PMC should ensure that installation emergency response personnel (fire, medical, and security) are aware of pesticides stored and used on the installation, proper first aid procedures, evacuation requirements, and decontamination procedures. The PMC should also be aware of local and national agencies that provide information on pesticides and pesticide security, including the following:

- a. Professional pest management associations--both national and state.
- b. State lead agencies.
- c. U.S. Environmental Protection Agency, Office of Pesticide Programs (703) 305-5440.
- d. U.S. Department of Health & Human Services (Centers for Disease Control and Prevention).
- e. National Pesticide Information Center (NPIC) 1-800-858-7378.
- f. American Association of Poison Control Centers 1-800-222-1222.
- g. CHEMTREC 1-800-424-9300.
- h. National Pesticide Telecommunications Network 1-800-858-7378
- i. DoD Pesticide Hotline (410) 436-3773.

2. Additional information on pesticide security can be found in Armed Forces Pest Management Board Technical Guide No. 17, Design of Pest Management Facilities, MIL-HDBK-1028/8A, 1 November 1991.

3. Information and assistance for public health emergencies may be obtained from the following agencies:

**Public Health Emergency Preparedness and Response (CDC)**  
(24 hours) - 770-488-7100

Hotline managed by:  
Bioterrorism Preparedness and Response Program  
Program questions: 404-639-0385  
Emergency Preparedness and Response Branch  
National Center for Environmental Health

**US Public Health Service (USPHS) Office of Emergency Preparedness**  
(24 hours) - 800-872-6367

OEP is an office within the U.S. Department of Health and Human Services and has Departmental responsibility for managing and coordinating Federal health, medical, and health-related social services and recovery from major emergencies and Federally declared disasters, including:

Natural Disasters  
Technological Disasters  
Major Transportation Accidents  
Terrorism

**US Coast Guard National Response Center**  
800-424-8802

The primary function of the National Response Center (NRC) is to serve as the sole national point of contact for reporting all oil, chemical, radiological, biological, and etiological discharges into the environment anywhere in the United States and its territories.

4. Selected internet sites dealing with pesticide security can be found in Appendix D.



## **APPENDIX A**

### **SAFEGUARDING AERIAL APPLICATION OF PESTICIDES**

This **Appendix** provides basic requirements and recommendations to help personnel plan and successfully implement aerial spray operations. In the aftermath of the September 11, 2001 tragedy, concerns have increased about homeland security, particularly with respect to agricultural aircraft and pesticide application.

Installations should ensure that security controls are in place to minimize the risk of aircraft being used by terrorists or other criminals, and should implement a strategy to ensure that the public is adequately protected from potential misuse.

Pest management coordinators should ensure implementation of applicable guidelines from the Federal Aviation Administration (FAA), the U.S. Environmental Protection Agency (EPA), the USDA Office of Security, the Forest Service's Fire and Aviation Management Staff, the National Agricultural Aviation Association (NAAA), and the U.S. Air Force Reserve's Aerial Spray Unit. For all DoD and cooperative projects where pesticides will be applied by aircraft, the following requirements apply:

#### **Requirements**

1. Project contracts and plans must include measures that address security for aircraft and related application equipment.
2. Project plans must include measures to deny access by unauthorized personnel to application equipment, pesticide products, and project areas.
3. To ensure that pesticide content is in agreement with the label, DoD and contract applicators must require that pesticides be in original, unopened, labeled containers and that the pesticide content is in agreement with the label.

In addition to the above requirements, the following recommendations should be implemented where financially and logistically feasible.

#### **Recommendations**

##### **1. Safeguarding Aircraft and Application Equipment**

Those projects that involve contractors or off-installation loading should be guarded against unauthorized use of spray aircraft. Project managers should consider implementing all measures necessary to maximize security. For example, military security

forces are normally available for projects carried out on military facilities or with military aircraft. While it is more challenging to prevent access to aircraft and equipment in remote field locations, designated personnel can be utilized to control access to application equipment and products or to close off areas where these resources are stored overnight. When possible, aircraft should be stored or held in a locked and/or secured facility. The locked facility might be a fenced area or a hangar equipped with detection devices or other systems when not in use. The NAAA recommends to its members that aircraft be secured in a locked facility or that aircraft be temporarily disabled in such a way as to block or prevent movement or be otherwise secured to prevent unauthorized use.

Security can be maximized by restricting access to project areas, by requiring identification badges, by providing security guards on a 24 hour/7days-a-week basis, or by locking and caging application equipment and pesticide materials.

Any of these measures can assure an adequate level of security against intrusion. Depending on the local situation, project managers should exercise maximum discretion to devise a level of security sufficient to deal with realistic threats. A balance should be sought between the cost of security needed to confront such threats and the project's ability to meet its pest suppression objectives.

## **2. Aircraft Pilots and Support Personnel**

Several measures can be implemented in order to ensure the reliability of contracted pilots, management staff, and support staff. Contractors should be required to provide an up-to-date list of personnel who will be employed for the project. The list should contain the names, background (work experience) and a form of identification for each individual. Project managers should collaborate with installation security authorities and require contractors to provide proof of security clearance or background checks for personnel that will have access to aircraft. Installations should also list personnel authorized to work with contractors and personnel assigned to work on the project. Project managers can use this information to develop project identification badges that will prevent access by unauthorized personnel.

To increase awareness of the importance of security measures, project contractors should be made aware of DoD concerns about aircraft safety and pesticide security. These concerns should be emphasized in aerial spray contracts and in the installation's aerial spray Statement of Need and Environmental Assessment. To maintain an appropriate level of operational security and safety, regulations governing crew rest should be enforced. The added time needed to fulfill security procedures should be considered as duty time for the crewmembers involved.

## **3. Integrity of Pesticide Products**

The integrity of pesticide products is an important issue. Accordingly, project managers should adopt a chain-of-custody approach.

The chain-of-custody approach relies upon product integrity matching the product label claims. Therefore, products under consideration for a given aerial spray program will be specified in the installation's environmental assessment and be purchased from trustworthy companies. This is a particularly important requirement for products purchased or utilized in bulk because such packaging entails a greater opportunity for contamination.

Products will be shipped and transported in sealed containers from the point of origin until delivery at the point of use or storage. Aerial spray program managers should not accept open containers. Pesticide products should be stored in a locked or secured facility. To minimize risk of contamination, a primary and alternate person should be tasked to order, track and control pesticides. To prevent contamination or tampering, product containers should be sealed at the end of each day's use.

#### **4. Operations and Airspace Restrictions**

Most national airspace restrictions instituted after September 11, 2001 have been lifted, except for the following:

1. 10 nautical miles around Reagan National Airport.
2. 1 mile around ground zero (New York City World Trade Center site).
3. 8 miles/4 miles (based on use/non-use) around Camp David in Catocin Mountain Park in Maryland.

The FAA has indicated that project managers and state cooperators can increase the probability of successful project implementation by communicating with regional and local Agency offices.

Installation project managers and state cooperators have been advised to carry out the following regional and local coordination procedures when planning aerial spray projects:

1. Comply with procedures and practices detailed in DoD 4150.7 and AFI 32-1074, when projects are on AFBs or performed by the 757AS/DOS on other DoD sites.
2. Coordinate with Operations Branch Air Traffic Managers (AEA-530 program) at FAA Regional Headquarters, if appropriate. When the installation includes an airfield, the airfield manager is an important military liaison to include in the planning process. Otherwise, the manager of the facility from which the flying operation will be conducted should be involved.
3. During operational implementation, the flight plans of the aerial spray aircraft must be filed daily with the FAA. In many cases it will be prudent to remind local authorities, especially law enforcement personnel, that there will be an aerial spray operation conducted in their area.

4. Nuclear power plants and urban areas with tall buildings are unrestricted sensitive areas. If spray blocks are located in the vicinity of these areas, special care will need to be taken to communicate flight plans with the FAA, especially on the day of spray operations.

## **5. Public Awareness and Notification**

It is well worth the extra effort to ensure that proper notification has been given to the community prior to the first spray flight of the operation. The type and volume of the notification should match the breadth of the spray project. For example, if the spray project includes a large populated area, then a television/radio release would be appropriate, rather than just releasing a newspaper notification. Additionally, local newspapers may be interested in covering the project as a community story. Increased awareness of planned spray operations will ease public concern. Establishment of a public information telephone number for daily updates on the project, including notification of areas to be treated, is also recommended.

## APPENDIX B

### ACUTE TOXICITY VALUES FOR PESTICIDES

Category of Toxicity	Label Signal Word	LD <sub>50</sub> Oral mg/kg (ppm)	LD <sub>50</sub> Dermal mg/kg	LC <sub>50</sub> Inhalation mg/l <sup>3</sup>	Approximate Lethal Oral Dose
I Highly Toxic	DANGER POISON	0 - 50	0 - 200	0 - 0.2	A few drops to a teaspoon
II Moderately Toxic	WARNING	50 - 500	200 - 2,000	0.2 - 2	1 teaspoon to 1 ounce
III Slightly Toxic	CAUTION	500 - 5,000	2,000 - 20,000	2.0 - 20	1 ounce to 1 pint/lb
IV Relatively Non-toxic	CAUTION	> 5,000	> 20,000	> 20	More than 1 pint/lb

LD<sub>50</sub> - lethal oral dosage in mg/kg (ppm or parts per million) to kill 50% of a population of test animals

LC<sub>50</sub> – lethal concentration for respiratory intake measured in mg/kg<sup>3</sup>

Exposure = time x toxicity

### RELATIVE ORAL TOXICITY (LD<sub>50</sub>) OF SELECTED CHEMICALS

Cyanide – 1	(rodenticide)	Picloram – 8,200	(herbicide)
Strychnine sulfate – 2	(rodenticide)	Methoprene – 34,600	(insecticide)
Parathion – 6-50	(insecticide)	<b>The following compounds are not pesticides but are offered for comparison:</b>	
Zinc phosphide – 40	(rodenticide)		
Paraquat – 150	(herbicide)		
Warfarin – 185	(rodenticide)		
Carbaryl – 250	(insecticide)	Nicotine – 1	
2,4-D – 350	(herbicide)	Caffeine – 355	
Diquat – 420	(herbicide)	Aspirin – 1,000	
Boric acid – 1,000-5,000	(insecticide)	Salt – 3,000	
Pyrethrins – 1,200-1,500	(insecticide)	Vinegar – 3,310	
Malathion – 1,375	(insecticide)	Alcohol – 14,000	
Glyphosate – 4,320	(herbicide)	Sugar – 29,700	

## APPENDIX C

### FIRST AID FOR PESTICIDE POISONING

#### 1. Route of Entry for Pesticide Poisoning.

- a. Oral - requires greater application rates unless water or food sources are contaminated.
- b. Dermal - requires materials of high toxicity or greater application rates.
- c. Ocular - provides quick entry of toxicant into system, a quick jump to the brain.
- d. Inhalation - provides quick entry of toxicant to the blood stream and transport throughout the body.

#### 2. General First Aid Guidelines.

- a. In the event of pesticide contact, perform basic first-aid procedures and get medical attention immediately.
- b. If possible, take the labeled container.
- c. If pesticides are in the eyes, flush with water for at least 15 minutes.
- d. If pesticides are on clothing, remove and wash the skin with soap and water.
- e. Review pesticide labels for any additional first-aid procedures.
- f. Symptoms of pesticide poisoning include:

blurred vision	nausea	unusual amount of sweating
difficulty in breathing	drooling	stomach cramps
severe running nose	tearing	trembling

Note: Pesticide poisoning symptoms often resemble those for heat prostration, smoke inhalation, and the flu. In general, medical attention should be sought if any feeling of discomfort or illness or unusual appearance occurs.

- g. Remain alert to symptoms of pesticide poisoning because the symptoms may be delayed up to 12 hours after exposure.

### **3. First Aid in the Event of Chemical Poisoning.**

#### **a. If you are alone with the victim:**

(1) **First** – see that the victim is breathing; if not, give artificial respiration. Expel any air in the victim's lungs first to protect the care giver from inhaled fumigant gases, and then proceed to inflate the lungs.

(2) **Second** – decontaminate the victim immediately; i.e., wash the victim thoroughly. Speed is essential.

(3) **Third** – call for medical help.

Note: Do not substitute first aid for professional treatment. First aid is intended only to sustain the victim before medical help arrives.

#### **b. If another person is with you and the victim:**

(1) Speed is essential; one person should begin first-aid treatment while the other calls for medical help.

(2) The medical personnel will give you instructions. They will very likely tell you to get the victim to the emergency room of a hospital or clinic. The equipment needed for proper treatment is there. Only if this is impossible should medical personnel be called to the site of the accident.

#### **c. General.**

(1) Give mouth-to-mouth artificial respiration if breathing has stopped. See precautions for inhaled fumigant gases in paragraph 3a (1), above.

(2) Stop exposure to the poison and, if poison is on the skin, cleanse the victim, including hair and fingernails. If swallowed, induce vomiting as directed.

(3) Save the pesticide container and material in it if any remains; get readable label or name of chemical for the medical personnel. If the poison is not known, save a sample of the vomitus.

### **4. Swallowed Poisons.**

a. Call for medical help immediately.

b. Read the pesticide label for guidance on swallowed poisons.

c. Do not induce vomiting if:

- (1) The victim is in a coma or unconscious.
- (2) The victim is in convulsions.
- (3) The victim has swallowed petroleum products.
- (4) The victim has swallowed a corrosive poison (strong acid or alkaline products) – symptoms: severe pain, burning sensation in the mouth and throat.

d. If the victim can swallow water after ingesting a corrosive poison, give the following substances by mouth. A corrosive substance is any material that will cause destruction of living tissue by contact.

- (1) For acids: milk, water, or milk of magnesia (1 tablespoon to 1 cup of water).
- (2) For alkali: milk or water; for victims 1-5 years old, 1-2 cups; for victims 5 years and older, up to 1 quart.
- (3) Universal: condensed canned milk, as much as the victim can consume.

e. When a noncorrosive substance has been swallowed, induce vomiting, if possible.

- (1) Give milk or water (for victims 1-5 years old, 1-2 cups; for victims over 5 years, up to 1 quart).
- (2) Induce vomiting by placing the blunt end of a spoon, not the handle, or your finger at the back of the victim's throat, or by giving 2 tablespoons of salt in a glass of warm water (an emetic).
- (3) When retching and vomiting begin, place the victim face down with the head lowered, thus preventing vomitus from entering the lungs and causing further damage. Do not let him lie on his back.
- (4) Do not waste excessive time in inducing vomiting if the hospital is a long distance away. It is better to spend the time getting the victim to the hospital, where drugs can be administered to induce vomiting and/or stomach pumps are available.
- (5) Collect vomitus in case the medical personnel need it for testing.

## **5. Poison on the Skin.**

- a. Drench the skin and clothing with water (shower, hose, faucet).



b. Remove clothing.

c. Cleanse the skin and hair thoroughly with soap and water; rapidity in washing is most important in reducing the extent of the injury.

## **6. Poison in the Eye.**

a. Hold eyelids open, immediately wash eyes with a gentle stream of clean running water. Use copious amounts. Delay of a few seconds greatly increases the extent of injury.

b. Continue washing for 15 minutes or more.

c. Do not use chemicals or drugs in wash water. They may increase the extent of injury.

Note: Eye lavages, either plumbed or portable, deliver a continuous stream of water at a constant pressure that will not injure the eye. Care should be taken when using a hose to ensure that the force of the water hitting the eye does not cause physical damage. The temperature of the water used to flush the eyes should be tepid (moderately warm).

## **7. Inhaled Poisons (Dusts, Vapors, Gases).**

a. If the victim is in an enclosed space, do not go in after him without a proper respirator. When the poison is unknown, use only air-supplied respirators.

b. Carry the victim (do not let him walk) to fresh air immediately.

c. Open all doors and windows, if any.

d. Loosen all tight clothing.

e. Apply artificial respiration if breathing has stopped or is irregular.

f. Call for medical help.

g. Prevent chilling (wrap the victim in blankets but do not overheat him).

h. Keep the victim as quiet as possible.

i. If the victim is convulsing, watch his breathing and protect him from falling or striking his head on the floor or wall. Keep his chin up so his air passage will remain free for breathing.

j. Do not give alcohol in any form.

## **8. Chemical Burns on the Skin.**

- a. Wash the skin with large quantities of running water.
- b. Remove contaminated clothing.
- c. Immediately cover with loosely applied clean cloth (any kind will do), depending on the size of the area burned.
- d. Avoid the use of ointments, greases, powders, and other drugs in first-aid treatment of burns.
- e. Treat for shock by keeping the victim flat, keeping him warm, and reassuring him until the arrival of medical help.

## **APPENDIX D**

### **SELECTED PESTICIDE SECURITY INTERNET SITES**

<http://entweb.clemson.edu/pesticid/Issues/security.htm>

<http://www.agri.state.id.us/PDF/Ag%20Resources/Updates%2010-4-2001.pdf>

<http://www.ext.colostate.edu/news/011010.html>

<http://www.eq.missouri.edu/news/1010012441.htm>

<http://npic.orst.edu/securityalerts.htm>

<http://www.pesticide.umd.edu/Leaflets/pil39.pdf>

<http://www.colostate.edu/Depts/SoilCrop/extension/CEPEP/factsheets/120web.pdf>

<http://www.pested.psu.edu/spsecurity.html>

<http://www.extension.umn.edu/projects/mpiap/biosecurity.htm>

<http://www.agr.state.tx.us/iga/security/>

[http://www.urbanext.uiuc.edu/agupdate/0111\\_article2.html](http://www.urbanext.uiuc.edu/agupdate/0111_article2.html)

<http://pubs.cas.psu.edu/freepubs/pdfs/uo212.pdf>

<http://www.agnr.umd.edu/AGNRnews/Article.cfm?ID=1159>