

Agrichemical and Environmental News

A monthly report on pesticides and related environmental issues

In This Issue

Special Issue Introduction1

Terrorists at the Table, Part I:
FDA Looks at Food
Bioterrorism.....2

Terrorists at the Table, Part II
Developing an Anti-Terrorism
Plan:5

Terrorism on the Hoof:
Livestock as a Bioterrorism
Target9

The "New" Bioterrorism: A
Public Health Perspective ...11

Pesticides as Weapons:
Agrichemical Industry's Role
in Anti-Terrorism13

Crop Duster Concerns: NW
Aerial Applicators Respond to
FBI/FAA.....16

AENews SPECIAL EDITION

Focus on Agriculture/Food Terrorism

Dr. Catherine Daniels, Managing Editor, and Sally O'Neal Coates, Editor, *Agrichemical and Environmental News*

In light of the September 11th terrorist attacks on our nation and the subsequent ripple effects on the agriculture and food production industries, the editorial staff of *AENews* felt it was appropriate to suspend our planned editorial calendar and devote this month's issue to the aspects of terrorism that have been associated with our industries.

William Edstrom, an epidemiologist working as Biological Surveillance Coordinator for the Spokane Regional Health District, who presents a **public health perspective on bioterrorism**.

Carol Ramsay, WSU's Pesticide Education Specialist, who helped us consolidate the considerable resources and communications from the agrichemical industry in recent weeks to present an overview of the threat of **pesticides as weapons**.

Contributors to this special issue include:

Drs. Gleyne Bledsoe and Barbara Rasco from Washington State University (WSU) and **Dr. LeeAnne Jackson** from the U.S. Food and Drug Administration (FDA) who address, in two separate articles, the threat of bioterrorism within the **food processing industry**.

Jock Warren, Director of the Association of Washington Aerial Applicators, who tells *AENews* about the **crop dusters'** viewpoint on the grounding and regulation of **agricultural aircraft** that occurred in the aftermath of the terrorist attacks.

Dr. Rocco Casagrande, a biochemist and agricultural consultant who explains the threat of **bioterrorism to livestock** and suggests effective measures that can be taken to minimize the risk of outbreak.

We wish to thank these individuals for responding to a tight timeline and taking some time out of their even-busier-than-usual schedules to share their professional perspectives with *AENews* readers.

AENews welcomes your comments. Please direct them to:
Catherine Daniels
Managing Editor, *AENews*
Pesticide Information Center
2710 University Drive
Richland, WA 99352-1671
Phone: 509-372-7495
Fax: 509-372-7491
E-mail: cdaniels@tricity.wsu.edu

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Terrorists at the Table

Part I: FDA Looks at Food Bioterrorism

Most members of the food industry are keenly aware of safety issues. Food poisoning, cross-contamination, Hazard Analysis and Critical Control Point (HACCP) strategies—these are all basic buzzwords and essential components in the training of food industry workers and administrators. The recent attacks on our country have made American citizens aware of something those of us at the U.S. Food and Drug Administration (FDA) have long realized: breaches of food safety are not always accidental. Contaminants in food can be placed there purposefully, with intent to do harm. In other words, food can be used as an agent of terrorism.

The New Face of Terrorism

Before I discuss the relationship between terrorism and food, let's take a moment to look at terrorism in general.

Terrorism, defined broadly, is the use of violence and intimidation to achieve an end. Historically, most acts of terrorism have been state-sponsored with political goals. But the last decade has seen the emergence of a new breed of terrorist, who is out to settle a grudge or to punish society.

Why has this new breed of terrorist emerged? Two basic reasons:

Terrorist attacks are easier, technically, than they used to be.

Terrorism is no longer so offensive, psychologically, to all members of society.

From the technical angle, it's simply easier today to get information on how to obtain and employ many destructive agents. The chemical and biological agents themselves are also relatively easy to obtain, manufacture, or grow.

The other factor in the emergence of this new breed of terrorist is psychological. It seems that the moral repugnance to terrorist acts no longer exists through-

out society. It is certainly clear that we in the United States are not immune to terrorism, nor does terrorism always originate outside our national borders. The Oklahoma City bombing and the nerve gas incident in the Tokyo subway both showed that a native citizen's attack against a civilian population is possible. Acts such as these make it clear that certain segments of society have crossed this psychological threshold.

Finally, it is worth noting that terrorist attacks come in a wide variety of sizes. The events of September 11, 2001 showed us all the horrors of terrorism on a large scale. But terrorism can take place on a small scale as well, and the results are no less tragic for each victim and for that victim's family.

Why Terrorize with Food?

There are three basic types of agents a terrorist might use: nuclear, chemical, and biological. Nuclear weapons have a great killing capacity, but they are very difficult to acquire. Chemical weapons are easy to acquire, but can lack the capacity to achieve mass destruction. Biological agents, on the other hand, have both qualities: ease of acquisition and the potential to affect a large number of people.

Why are we concerned about terrorism associated with the food supply? For starters, some experts say that the historical preference of terrorists for explosives appears to be changing. If a terrorist were looking for a way to cause a tremendous number of casualties without explosives, exposing masses of people to standard biological warfare agents such as smallpox or anthrax might be effective, but the means of delivery poses a problem.

The food supply offers an obvious delivery mechanism for certain chemical and biological agents. After all, we all have to eat. Food production and distribution is a very complex and multi-layered system, therefore it offers many opportunities for the deliberate introduction of toxic agents. The increasingly global nature of the food supply serves to exacerbate this problem.

Dr. LeeAnne Jackson, Health Science Policy Advisor, FDA

The FDA and other U.S. governmental institutions, along with food processors and distributors, are keenly aware of this potential problem. We have long understood that our public food and water supplies are among the most likely avenues for terrorist threats.

It Has Already Occurred

Malicious attacks using food as a delivery system have already occurred, both in the United States and other countries.

Canada, 1970: A meal served in Montreal, Quebec was inoculated with large quantities of eggs from a parasitic nematode, *Ascaris suum*. Approximately two weeks after ingestion, four male students were admitted to the hospital with pulmonary infiltrates, asthma, and an increase in a particular type of white blood cell indicative of an allergic reaction or parasitic infection.

England, 1984: A group was charged with injecting a turkey with weed killer containing mercury.

United States 1984: The Rajaneesh cult inoculated items on several restaurant salad bars with *Salmonella typhimurium*. This act was implicated in causing illness in 751 individuals in and around The Dalles, Oregon.

United States, 1996: A medical laboratory worker in Texas contaminated muffins and donuts in a break room with *Shigella dysenteriae* Type 2. Twelve people were infected, four of whom had to be hospitalized.

Canada, 2000: In Quebec City, twenty-seven people were poisoned with arsenic after drinking coffee from a single vending machine in the agriculture department at LaValle University.

United States, 2001: In New York City, an individual was arrested for contaminating a salad bar with human feces and urine.

Accident or Terrorism?

Distinguishing between a deliberate and an inadvertent contamination of food can be extremely difficult. Numerous outbreaks of foodborne illness occur each year; investigations are conducted to discover the cause. During the investigation, clues can arise that would lead investigators to suspect deliberate contamination with a biological agent as opposed to inadvertent or accidental contamination.

FDA is currently working to improve analytical methods and refine surveillance techniques. One of the challenges we face is that rapid assays are not available for a number of potential threat agents. Assays developed for biological warfare situations may not work for the same pathogens when they are mixed into complex food matrices. (From an analytical standpoint, mayonnaise is different than ground beef, which is different than fresh vegetables, and so forth.) Further complicating analysis is the fact that deliberate contamination can be randomly distributed in the food, so sampling is problematic. The bottom line is that you can't analyze for everything all of the time; there will always be something for which you are not analyzing.

Crying Wolf

Of course, we would all prefer that food terrorism be detected and stopped before it occurs. This presents a problem, too. When is a threat real and when is it a hoax? Hoaxes themselves are very dangerous. Responding to false alarms can overwhelm public safety response capabilities, engender a sense of nonchalance after numerous repetitions, and incite public fear and anxiety inappropriately. Remember the reports of flesh-eating bacteria in imported bananas? This hoax took an economic toll on the banana industry and also required a significant amount of staff time on the part of FDA and the Centers for Disease Control and Prevention (CDC) in answering all of the inquiries.

Dr. LeeAnne Jackson, Health Science Policy Advisor, FDA

What Can We Do?

There are many things food industry managers and workers can do to help insure the safety of the products they manufacture. For starters, we all need to practice the standard food safety protocols to guard against contamination. Then we must expand our thinking to consider ways to minimize the opportunity for intentional contamination.

Know your employees. Consider doing background checks.

Restrict facility access. How closely do you monitor who has access to your facility? Could anybody walk in the door, put on a lab coat, a pair of coveralls, or a company blazer and have free access to your facility? What about your office staff? Do they have free access to your production floor? Should they?

Know your contractors and their policies. Do you have a cleaning crew that comes in after hours or a contract with a pest control company? Does anyone monitor the cleaning crew or walk the bait stations with your pest control representative? Do they have free access to all parts of the facility?

Know your suppliers and their products. Are you confident of the product that they ship you? Have you been to their site of manufacture to insure the safety of the product that they provide you?

Understand the transport and distribution chain before and after your operation. What do you know about the truck drivers who distribute your product? Do they have facility access when they pull up to your docks? Do you know what happens to your food products after they load the truck and then pull away from the dock?

FDA's Role

The FDA is working hard to continue to ensure that the United States has the world's safest food supply.

We focus on three major areas: deterrence, surveillance and threat assessment, and containment through rapid response.

Deterrence can be accomplished by increasing the presence and visibility of inspectors at critical points in the food production and distribution system. Communication is also key to ensuring that we have the information to prevent an event. We have improved and continue to improve our communications with other governmental organizations involved in intelligence and response to food terrorism. These improvements are taking place at the state and local level as well as the Federal level. Communication and cooperation with industry is also critical. Food industry representatives should report all threats of terrorism to the FDA. Sometimes people are reluctant to contact Federal authorities, but this is truly a case where we all must pool our intelligence resources and work together.

Surveillance of imported and domestic foods must be strengthened. The FDA will continue developing and evaluating rapid contaminant detection methods to assist with food safety surveillance and incident response. Cost-effective microassay and biosensor technology is being developed with the goal of making these resources available to everyone involved in food safety. Threat assessments of the food and cosmetic industries are also key to identifying where the vulnerabilities lie and how to close those gaps.

We are developing rapid response teams and detailed risk and communication plans. We are working with government and industry at all levels, communicating one-to-one and through workshops and presentations designed to increase awareness and knowledge of the issues and potential solutions. Working together, we can make a difference and minimize the vulnerability of our nation's food supply.

Dr. LeeAnne Jackson (**LeeAnne.Jackson@cfsan.fda.gov** or 202-205-2248) is a member of the Executive Operations Staff at FDA's Center for Food Safety and Applied Nutrition in Washington, DC.

Terrorists at the Table

Part II: Developing an Anti-Terrorism Plan

Drs. Gleyne E. Bledsoe and Barbara A. Rasco, Washington State University

The events of September 11, 2001 focused the nation's and the world's attention on terrorism and the threat of future terrorist acts. At the forefront in the media have been articles and broadcasts about the threat of attacks by international terrorist organizations using biological agents. Much of this coverage has emphasized organisms commonly classed as "Weapons of Mass Destruction" (WMD) such as anthrax, smallpox, plague, or botulinum toxin. Attacks with these pathogenic agents would not only be fatal to many of the afflicted, but would also rapidly overwhelm the medical response resources of even the most advanced nation.

Large-Scale vs. Local Threats

While WMD attacks are a potential threat to our nation, we do not believe they are the most likely risk to the public at large. Biological WMD are relatively difficult to stabilize, transport, and effectively disseminate. Simpler and therefore, we believe, more likely to be used are common bacterial pathogens such as *Salmonella* spp. and *E. coli* O157:H7. An attack employing these agents could be perpetrated by groups with more limited resources and objectives than those seeking to "eliminate all Americans." (See examples of recent instances of such attacks in the previous article: "Terrorism at the Table, Part I: FDA Looks at Food Bioterrorism.")

How great is our risk of exposure to food bioterrorism, whether large- or small-scale? Should we panic? No, but we should recognize the risk, keep it in perspective, and take reasonable preventive measures.

Definitions

Before discussing preventive measures, we should define some terms. First, "terrorism" can be defined as the use of force or violence against persons or property in violation of criminal laws for the purpose of intimidation, coercion, or ransom. "Biological terrorism" or "bioterrorism" involves the use of biological agents in these acts. Bioterrorism can also be defined to include acts of ecoterrorism, since ecoterrorism has biological targets. ("Ecoterrorism" is more broadly defined as acts of terrorism taken against a person,

corporation or other entity with the intention of causing property damage, physical injury, intimidation, or economic damage.) For the purpose of this discussion we will use the broadest definition, which also includes the use of chemical or toxic agents in such acts. "Anti-terrorism" includes defensive measures used to reduce the vulnerability of individuals and property to terrorist acts, while "counter terrorism" refers to offensive measures to prevent, deter, and respond to terrorism.

Profiles: Terrorism and Terrorists

Who are the most likely perpetrators of terrorist activity targeting the food industry? Motivation can range from economic (targeted to financially impact a specific commercial entity or industry segment) to political (making a statement or swaying an election outcome) to malicious mischief (the infamous "copy-cat" mentality). The most probable perpetrators are groups promoting causes with a degree of public support. Commonly, bio- or eco-terrorists are anarchist factions tied directly or indirectly to mainstream groups that reasonably and peaceably strive to promote their political causes. These "spin-off" terrorist factions typically form loosely organized, fluid networks or cells with anonymous memberships. They carefully research their targets and they employ increasingly sophisticated tactics. Their motivation is elimination of real or imagined injustices.

Specific attack strategies range from making false statements or accusations to performing overt acts designed to destroy property, information and communication systems, crops, animals, or people. Product tampering (real or hoaxes) and vandalism have proven particularly "productive" in terms of perpetrator notoriety and economic damage to the target. Threats of bioterrorism can be as effective as actual destruction. Simply claiming that a product has been purposely contaminated is normally sufficient to result in an extensive recall of that product with associated adverse publicity and the implementation of significant preventative measures.

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The agriculture/food/fiber production and processing industries are particularly vulnerable targets of bioterrorism. There are groups violently opposed to the development of natural resources, the use or development of genetically modified organisms, the "imprisonment and exploitation" of animals, and the use of meat and fur. Specific targets include primary producers, processors, distributors, retailers, shareholders, consumers, vendors/suppliers, and researchers. Corporations, in particular, are considered by most terrorist groups to be nonstate and/or metastate entities and therefore legitimate targets of aggression. Universities are culpable by their association with private corporations or associated foundations. Government research facilities can be targeted as a political statement against an unpopular governmental policy or for failure to take certain types of political or legislative action which would further the cause of the terrorist group. The balance of this article focuses on anti-terrorist efforts primarily applicable to farms and food processing plants, though other types of facilities may be able to adapt and employ the strategies we describe.

Developing a Plan

Preventive measures against agricultural and food terrorism must be determined on a case-by-case basis. Each company or organization should evaluate its unique situation at each of its locations and develop a sensible approach for managing risk. Critical factors in developing these preventive measures will include evaluating specific hazards, determining relative risk, and evaluating economic realities. There is a strong parallel between developing a preventive strategy for terrorist attacks and developing a Hazard Analysis and Critical Control Point (HACCP) plan. Both emphasize *preventive* over *reactive* measures.

Initially a company or organization should complete an analysis of its facilities and operations to identify significant hazards and exposure potential and to determine the risks of an occurrence. This analysis should not be limited to the production facility nor limited to peak operating times, but should include the entire scope of operations. Next, critical control points

should be identified and monitoring procedures established for these critical control points. Since it will probably be impossible to eliminate all hazards, a reasonable procedure must be instituted to manage them. Documentation and verification must be part of the protocol. An outline for developing a security plan based upon HACCP principles is shown in the box opposite.

Making It Work

The key to a successful program is vigilance by management and all employees. Training is a must. A clear standard operating procedure must be developed and followed for day-to-day operations, for suspicious incidents, and for actual attacks. The problems resulting from a terrorist attack would be similar to those a food processor might anticipate in its crisis management plan. Should product safety be in question, for example, recall procedures would need to be followed.

Where do you start in safeguarding your organization's process? How far do you go? There is no simple answer to this question; cost is often the controlling factor. You simply can't afford to guard against every eventuality. Farmers might start by requiring certification from seed, feed, livestock, fertilizer, pesticide, and herbicide providers, periodically seeking third-party verification. Growers can monitor harvests until the product has left their premises. To the extent practical, access to cropland and livestock should be controlled and restricted to appropriate personnel. Surveillance equipment is also an option; the cost of such equipment has decreased markedly in recent years. Consideration should also be given to compartmentalizing livestock operations and requiring foot and even vehicle sanitation dips at critical access points. (See related article, "Terrorism on the Hoof: Livestock as a Bioterrorism Target," p. 9.)

Food processors should request certifications from suppliers and require protected transportation of ingredients. Maintain security and integrity of water supplies, even if the water comes from a municipal source. Controls during distribution and transit are

Drs. Gleyn E. Bledsoe and Barbara A. Rasco, Washington State University

important; preventive measures could include tamper-proof sealing of vans, cars, and containers, and enroute monitoring. The seal numbers should be communicated electronically, with the numbers and seal integrity verified upon receipt. Off-loading should be conducted under controlled conditions and the process should be monitored periodically.

Access to processing areas by visitors and employees should be strictly controlled both within the plant and between different areas of the plant. Employee and contractor screening will become increasingly important. We recommend that both criminal background and credit checks be conducted as a condition of employment. Individuals purporting to be inspectors should provide appropriate identification and be escorted at all times within the plant.

Employees should be made aware of their responsibilities to stay alert for and report suspicious activities, objects, and persons. Employees can help watch for: surveillance of their facilities by suspicious person(s); surveillance of employees at work or at home; presence of unidentified, unattended or unauthorized vehicles; presence of containers in or near facilities; and unauthorized access (even to unsecured areas) by unidentified persons or employees who have no apparent reason to be there.

It is prudent for all companies to have procedures in place about handling packages or heavy envelopes which arrive in the mail or by delivery services from unknown senders, have unclear return address, and or have unusual odor or appearance.

Management should file a copy of the company's safety and emergency procedures with the local municipal planning department and with emergency response agencies, requesting that these documents be safeguarded and not released to other parties without corporate management's knowledge and consent.

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Developing an Anti-Terrorism Security Plan

Based on HACCP* Principles

1

Evaluate significant hazards and exposure; determine risk.

2

Develop and institute preventive measures to reduce hazards.

3

Determine critical control points for your operation.

These could be locations, processes, functions, or times when your operation is at greatest risk.

4

Develop monitoring procedures for each critical control point.

Monitoring is a systematic periodic activity to ensure that critical controls are in place and have not been breached or compromised in any way. These should be in writing. Make sure your monitoring procedure works and is both tolerable and feasible for your organization.

5

Develop a corrective action procedure to fix security problems or failures that occur if a critical control has been breached or compromised.

Ensure that problems are fixed. Revise critical controls and/or monitoring procedures accordingly. Retest monitoring procedures.

6

Verify or test your program periodically to ensure that it works.

Having a confidential written protocol is vital; it should be revised as your operations change.

*Hazard Analysis and Critical Control Point

Drs. Gleyn E. Bledsoe and Barbara A. Rasco, Washington State University

Contacts and Conclusions

Following the September 11th incident, the Food and Drug Administration (FDA) contacted major food industry associations requesting that they advise their members to review their current procedures and markedly increase their vigilance. The FDA and other governmental agencies can provide assistance in planning and response to real or suspected terrorist incidents.

If you think your company has been or might be the target of a terrorist attack, seek immediate assistance from your local law enforcement and health/hazardous material handling experts (often the fire department). Additional support can be provided by the Federal Bureau of Investigation (FBI), U.S. Department of Agriculture Office of Crisis Planning and Management, or the Washington State Emergency Management Division. (See also the lists of emergency contacts on page 20 and resources on pages 12 and 15.)

There is no way to present the full picture of the bioterrorist threat to the food production industries in such a short article, let alone address the full scope of terrorist threats, including cyber, conventional, and

economic terrorist acts. Suffice it to say that the threat is real and that the Pacific Northwest has had more than its share of incidents in the past five years. Most likely these threats will continue, but individuals, institutions, and companies can become more cognizant of the threat and take steps to reduce the likelihood and impact of any incident. This does not mean that paranoia becomes the preeminent factor in our operations. Quite the contrary, we must keep the risk in perspective and let common sense prevail. Prior planning, training, and established procedures are essential. Please feel free to contact the authors should you desire additional information or assistance in addressing these issues.

Dr. Gleyn Bledsoe is a former U.S. Air Force Intelligence Analyst. He continues to serve as an advisor to the Department of Defense and to industry on bioterrorist threats and preventative measures for food and water systems. He may be reached at the WSU Department of Biological Systems Engineering, at (509) 335-8167 or gleyn@wsu.edu. Dr. Barbara Rasco is a specialist in food law and a Distinguished Lecturer with the Institute of Food Technologists on food law and bioterrorist threats. She may be reached at WSU's Department of Food Science and Human Nutrition, at (509) 335-1858 or rasco@wsu.edu.

Errors in IR-4 Tables

In the July and August issues of *AENews* (Nos. 183 and 184), we listed the various pesticide projects initiated by Interregional Research Project Number 4 (IR-4) in 2001 in a lengthy series of tables. The tables contained several errors.

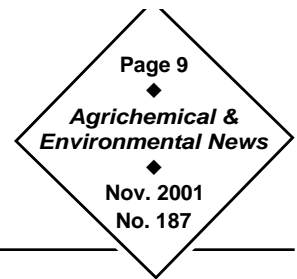
July Issue Errors: Pp. 12-13, herbicide azimsulfuron will not be sold in the United States. Pp. 18-19, insecticide indoxacarb is registered on cotton, apple, broccoli, cabbage (tight headed varieties), cauliflower, sweet corn (whorl application only), lettuce (head and leaf), pear, peppers (bell and non-bell), and tomatoes.

August Issue Errors: Pp. 8-9, fungicide cymoxanil (trade name Curzate) is registered on potatoes, with registration pending on hops and registration potential for head and leaf lettuce. An acetamide, it is effective against downy mildew, late blight, *Phytophthora*, *Plasmopara*, *Pseudoperonospora*, *Bremia*, and *Peronospora* and should be tank mixed with other fungicides for resistance management. Pp. 10-11, famoxadone (trade name Tanos) is registered on potatoes, hops, fruiting vegetables (eggplant, tomatoes, peppers, etc.), cucurbits (melons, cantaloupes, squash, etc.), onions, garlic. An oxazolidinedione, it has broad-spectrum activity against *Alternaria*, *Phytophthora*, *Peronospora*, *Septoria*, and other oomycetes and ascomycetes. Famoxate was listed on the original table in error.

The full, corrected tables can be viewed in the July and August electronic issues of *AENews*, which can be found on the Internet via our index page, <http://aenews.wsu.edu>.

Terrorism on the Hoof

Livestock as a Bioterrorism Target



Dr. Rocco Casagrande, Biochemist and Founder, PAPO-Griffin Consulting

The September 11th tragedy left many Americans in fear of another wave of catastrophic terrorism. Rumors of the potential for terrorism with biological weapons fill the ears of city dwellers. Biological weapons are most often thought of as those agents designed to kill people, such as plague or smallpox. However, the use of livestock disease to create logistical and economic chaos predates the modern effort to harness the microbe as a tool for mass murder.

Why Target Animals?

There are several reasons terrorists might resort to anti-livestock biological weapons to accomplish their goals. Agricultural pathogens are relatively easy to obtain and disseminate. A successful attack does not need to infect thousands of animals. Many pathogens can spread aggressively from farm to farm, so a small-scale attack on a few farms could balloon into an epidemic spread by the wind or by the movement of animals and equipment.

The economic implications of a successful attack can be large and swift. To prevent the spread of disease, infrastructure is in place to severely curtail movement of diseased agricultural products from country to country or from region to region within our own country. As a result, farms with infected livestock (or other agricultural products) lose both export and domestic sales. Add to that the associated losses in the related industries of storage, transport, processing, and sales of agricultural products, and even a small-scale natural or intentional outbreak of agricultural disease becomes extremely costly.

Fight Simple with Simple

Acquiring and working with livestock pathogens does not require technical sophistication. If technically unsophisticated terrorists acquire these weapons, they will most likely try to disseminate them via crude and simple methods. Fortunately, equally simple and low-cost measures can be taken to reduce the likelihood that an attack will turn into an epidemic. And many of these steps have the additional benefit of reducing the extent and severity of naturally occurring disease outbreaks.

Large initial disease outbreaks increase the likelihood of the disease spreading to other farms due to the enormous amount of infectious agent produced when many animals are infected. To infect the largest number of animals at once, a terrorist may try to contaminate products, such as feed, that are distributed widely to the whole herd. In fact, a chemical attack on dairy cattle was executed by poisoning the feed supply of the herd, leading to the destruction of the entire herd. To prevent such attacks from occurring, farmers should lock or put tamper-evident seals on bins that hold products that are distributed widely to the herd. Although these measures will not prevent these goods from being tampered with, they will inform the farmer that the goods should not be distributed to their animals.

The Bigger Picture

Actions such as bin locks and seals are inexpensive and do not interfere with normal operations, so it doesn't hurt to implement these measures. Ideally, any measure taken to thwart the effects of a relatively unlikely occurrence of terrorism should also help stop the spread of natural, virtually inevitable livestock disease outbreaks. Certain precautionary steps can and should be taken that will make the intentional introduction of disease to livestock more difficult and also help prevent the catastrophic spread of natural outbreaks of disease.

One such measure is to increase biosecurity at auction and sale barns. In an exercise conducted by the United States during the Cold War, agents acting as potential customers infiltrated auction and sale barns and pretended to infect livestock by spraying animals with spray bottles that contained water (to simulate a solution of virus) or dropping handkerchiefs (to simulate a pathogen-soaked rag) into a livestock pen. Both of these methods would be highly effective in spreading diseases such as foot and mouth disease (which can remain infective in cloth for at least a month). To prevent such an attack, owners of auction and sale barns should prevent as much direct contact as possible between people and animals. Simply searching visitors is not sufficient be-

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Terrorism and Livestock, cont.

Dr. Rocco Casagrande, Biochemist and Founder, PAPO-Griffin Consulting

cause many livestock diseases can be effectively transported on their clothing or hands and spread by rubbing a contaminated sleeve on a target animal. Animals could be separated from people by a double fence or other barrier. These measures will also help prevent the accidental spread of disease by visitors from a farm with an undiagnosed outbreak.

A terrorist could infect a herd by bringing a diseased animal into proximity with animals from other farms. Animals from different farms should be kept separate in auction and sale barns. Furthermore, animals should be inspected for disease symptoms before they are unloaded at an auction site. Because any animal that was in an auction/sale barn has been in contact with equipment touched by animals from other farms, such as the walls and floors of entryways, these animals should be quarantined until it is clear that they are uninfected. Farmhands that visit other farms should be instructed to change clothing and wash their hands before returning to work on their ranch. Foot baths should be employed for sanitation. Trucks that transport animals from more than one farm should always be washed before transporting a new shipment of animals. These measures will help prevent the spread of natural disease from farm to farm and reduce the number of animals infected if the disease does spread.

To prevent spread of a disease throughout a large farm or ranch, delineate artificial zones to divide the facility. The zones should be treated as separate farms and animals in each zone should be considered as originating from other farms. Therefore, animals and inexpensive equipment should not be moved between these zones and workers should tend animals only in their zone. Expensive equipment that must for economic reasons be used throughout the operation should be sanitized before moving to another zone. Likewise, essential personnel moving between zones should wash and change clothing. These measures will help limit the spread of any accidentally or intentionally introduced disease to a subsection of the herd, thereby reducing the amount of pathogen produced and reducing the chance that the disease will spread to other farms.

Farmers Are the Gatekeepers

Alert farmers are the first line of defense against the spread of agricultural disease. Farmers should get to know the symptoms of the most economically important diseases that affect their livestock and train their key employees to recognize them as well. Information about these diseases can be found at the U.S. Department of Agriculture's Animal and Plant Health Inspection Service Web site (<http://www.aphis.usda.gov/oa/pubs/factsheets.html>). Herds should be inspected regularly; if any animal shows disease symptoms, that animal should be isolated. A veterinarian should be called immediately to confirm the presence of the disease. Carcasses of animals that have died after a sudden illness should be sent to the appropriate laboratory. It is vitally important that the proper animal health authorities be notified as soon as possible in each of these situations (see contact information, page 12).

A farmer may hesitate to call animal health officials for fear his entire herd will be quarantined, but a quick response will eventually benefit everyone. The U.S. government reimburses farmers for animals destroyed to prevent the spread of disease. The longer diseased animals live, the greater the chance the disease will spread to other animals on a farm and in other farms. The more farms the disease spreads to, the longer the epidemic will last and greater the losses.

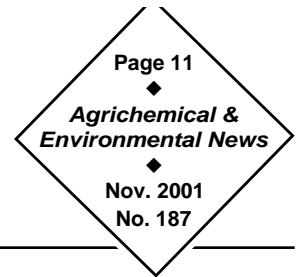
Conclusion

Implementing enhanced biosecurity measures and being vigilant about signs of disease will not prevent a terrorist attack on livestock, but these actions will significantly reduce the damage of any such attack by limiting the extent of the outbreak. Even if an intentional infection of livestock never occurs, these measures will limit the spread of inevitable, natural outbreaks of disease.

Dr. Rocco Casagrande (rocco@papo-griffin.com) is a biochemist who studies biological weapon defense. He is the founder of PAPO-Griffin Consulting, a firm that helps companies and farmers prepare for biological attacks on agriculture.

The "New" Bioterrorism

A Public Health Perspective



William Edstrom, MPH, Epidemiologist, Spokane Regional Health District

The terrorist attacks on our nation have brought many issues into open public discussion. Among the topics now being discussed is bioterrorism. Bioterrorism is, essentially, the use of biological materials such as pathogens or disease-causing agents for terrorist purposes. What many Americans don't realize is that bioterrorism is not a new topic. What has changed is that now the word is being used everywhere from legislative chambers to boardrooms to coffee shops to living rooms.

Wide Awake at the Wheel

I've been at work as the Bioterrorism Surveillance Coordinator with the Spokane Regional Health District for two years. My position, funded by the Centers for Disease Control and Prevention (CDC), came about as the result of national legislation enacted in 1999. Under this legislation, CDC was assigned a role in the surveillance, assessment, and tactical response to biological terrorist attacks. Washington State has three Bioterrorism Surveillance Coordinators, Byron Byrne, Julie Wicklund, and myself. With funding of about \$5.5 million over five years, we work on bioterrorism response planning.

Washington State bioterrorism preparedness activities include dissemination of information, working with medical labs, and enhancing the security and delivery mechanisms of public health computer systems. We need to have the expertise and ability to respond to the standard bioterrorism weapons (e.g., *Bacillus anthracis* or anthrax, *Yersinia pestis* or plague, *Francisella tularensis* or rabbit fever, *Botulinus toxin* or botulism, and *Variola major* or smallpox) as well as the range of other pathogens (e.g., enteric illnesses including *E. coli* 0157 and *Salmonella*) that could be used to attack the human population.

The Livestock Connection

Of the five biological agents listed above as "standard bioterrorism weapons," the first three (anthrax, plague, and rabbit fever) are zoonotics. This means they are diseases of animals that can be transmitted to humans. Because of this connection, my office works with the Spokane County veterinary disaster

coordinator. Almost every county in Washington State has a volunteer coordinator who acts as a liaison to the Washington State Department of Agriculture (WSDA) in the event of a disaster involving livestock or pet animals. If an agricultural producer in Washington presents an animal infected with one of several dozen specific diseases to her veterinarian, that veterinarian contacts the veterinary disaster coordinator immediately, who in turn contacts WSDA. I get involved in cases where zoonotic disease is present that might affect the human population.

It is theoretically possible for a terrorist element to introduce infections to an animal population. Such an outbreak could impact humans via secondary infections or via animal mortality affecting meat or dairy production and the food supply. The best way to guard against animal infections reaching the human population is to maintain your animals' good health, monitor your herd for changes that could indicate illness, and bring suspect animals to the attention of your veterinarian.

In an effort to increase awareness of epizootics and other veterinary diseases of grave concern, I recently worked with WSDA and the Washington State Department of Health (DOH) to put together a poster for veterinarians in Washington. This poster lists the various emergency diseases requiring immediate and next-day reporting to WSDA or the Department of Fish and Wildlife along with contact information. The information was adapted from the *WSDA Animal Handbook for Veterinarians* published January 2000 and combined with the latest state laws regarding such reporting. The posters will soon be available through DOH at (877) 539-4344. (For more information about biosecurity with respect to livestock, see "Biosecurity Resources" at the end of this article. See also previous article, "Terrorism on the Hoof: Livestock as a Bioterrorism Target.")

Bioterrorism from Farm to Table

We in the public health arena must consider the food chain all the way from the stockyard through processing and distribution to the family dinner table. There

William Edstrom, MPH, Epidemiologist, Spokane Regional Health District

are many opportunities for the safety of the food production cycle to be breached. (See "Terrorists at the Table, Parts I and II, pp. 2-8.)

We encourage food processors to limit access to their production, storage, and packing areas. This can be as simple as installing locks and rerouting routine traffic. Within the production process itself, routine testing for pathogens is good, but randomized routine testing is better. If, for example, a meat processing facility always tests their product once at the carcass stage then again just before the chunks of meat go into the grinder, this pattern presents an opportunity for someone with malicious intent. When testing is routine, all points after the testing become potential security breaches. In this example, someone could inoculate the ground meat with an infectious disease at any point after the grinding process without fear of detection. Randomized safety checkpoints would increase the fear of detection, perhaps decreasing the likelihood of sabotage.

On the home front, standard food safety practices are still the best safeguard against disease. Cook your food to the proper recommended internal temperature and wash or peel uncooked items before eating.

After the Fact

While much of my work is in the arena of education, communication, and strategic surveillance directed toward preventing bioterrorist attacks, we are also prepared to respond to incidents should they occur.

Since many deadly pathogens cause initial symptoms similar to the flu, it is important that everyone from emergency medical technicians to health district staff be educated in distinguishing the symptoms specific to the most likely bioterrorism agents. I have prepared information flyers for my county detailing many of the salient facts. Should an infection escalate among the population, we have strategies in place that will allow us to intervene and prevent a higher death toll. Such strategies could include working with local authorities to affect quarantines, bringing in appropriate pharmaceuticals, and initiating decontamination procedures.

Working Together

In the final analysis, we are all soldiers in the war on terrorism. Each of us is responsible for his or her own sphere of influence. The dangers are not new. People like me in the public health arena have known about bioterrorism for a long time. People in agriculture and food production have, too. Now we all need to do our part to lock up, restrict access, clean up, and make our homes, businesses, and communities as safe as we can.

Bill Edstrom is the Bioterrorism Surveillance Coordinator with the Spokane Regional Health District. The office can be reached at (509) 324-1500 or (888) 535-0597, and Bill can be reached by e-mail at wedstrom@spokanecounty.org.

Biosecurity Resources

State Veterinarian, Idaho
Dr. Bob Hillman, (208) 332-8540
bhillman@agri.state.id.us

State Veterinarian, Oregon
Dr. Andrew Clark, (503) 986-4680
aclark@oda.state.or.us

State Veterinarian, Washington
Dr. Robert Mead, (360) 902-1881
rmead@agr.wa.gov

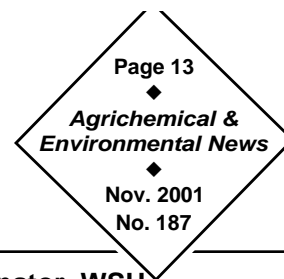
U.S. Department of Agriculture Animal and Plant Health Inspection Service (USDA/APHIS):
<http://www.aphis.usda.gov/>

Bioterrorism Information

U.S. Centers for Disease Control and Prevention: <http://www.bt.cdc.gov>

Pesticides as Weapons

Agrichemical Industry's Role in Anti-Terrorism



Carol Ramsay, Pesticide Education Specialist; Dr. Catherine Daniels, Pesticide Coordinator, WSU

By the time this article goes to press, we would hope that everyone involved in the application, sale, and distribution of pesticides would understand that we all play a role in safeguarding the public from the toxic chemicals with which we work. Agrichemicals are powerful allies in producing the food we put on our tables. Those of us who work with these agents respect their properties. That's why pesticide manufacturing, distribution, and application are highly regulated activities, and why this newsletter devotes many pages of each monthly issue to evaluation and discussion of pesticide safety.

Circling the Wagons

We in the agrichemical industries understand the importance of registration, licensing, and proper handling and storage of pesticides and other agrichemicals. We know we must work together, sharing information and resources to keep our industry a safe one. In the weeks following the terrorist attacks on America, there has been even greater spirit of cooperation within our ranks. Extension bulletins, e-mails, listserves, and other communications from professional organizations, regulators, and individuals have provided a wealth of information about pesticide safety. These materials have provided useful perspectives on the roles that we play in the big picture of safeguarding our families, our employees, and our nation, and have also engendered a sense of community among those in the industry.

The bottom line is that we need to do everything in our power to keep the toxic, flammable, and otherwise potentially dangerous chemicals we use out of the hands of those who might wish to use them as agents of harm. This means securing pesticides (and other potentially dangerous chemicals) and application equipment. If you are a grower or other applicator, try to purchase and store only those supplies you need for the season, to avoid unnecessary stockpiling. Should you have pesticides leftover at the end of the season, dispose of them properly (if you need guidance, contact your state's department of agriculture).

Pay attention to the personnel in and around your place of business. Know your employees and the others who have access to your facility. Restrict access to areas where chemicals and application equipment are stored, and keep an accurate, up-to-date inventory of your stock on hand.

Pesticide dealers and distributors need to follow these basic precautions and more. Make sure to check the pesticide license information of those purchasing pesticides, making sure they are authorized.

A checklist of safe practices is provided at the end of this article. Most items are common sense, and many are reminders of things we have learned during our licensing training. But over time, we may have become careless or complacent in our routines. Now is a good time to reevaluate our security practices.

A Cautionary Tale

Securing toxic chemicals is obviously important. But some of us don't work directly with chemicals; we work with information. What role can we play? Late last month, one of our Washington State University (WSU) information specialists had an opportunity to think about that.

The specialist received an e-mail inquiry about long-term storage of a pesticide in two-liter soft-drink-type bottles. The particular pesticide mentioned was one she knew to be highly toxic. The e-mail was not signed and came from a "Hotmail" address (a free Internet e-mail service available to anyone).

Following normal protocol, the specialist informed the inquiring party about the importance of storing pesticides in their original containers or obtaining information on alternative storage directly from the manufacturer. Pressing for more information, but still without identification or signature, the inquirer e-mailed a second time. The nature of the inquiries and of the specific pesticide caused the specialist to forward the e-mail to the authorities.

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Did this specialist's action prevent someone with a terrorist agenda from gaining information? We will probably never know. But we believe it was prudent and responsible given today's climate and our responsibilities as pesticide stewards. The fact is that if someone wanted to use a pesticide as a weapon, that person might very well contact one of us—a researcher, an extension agent, a regulatory employee, a chemical distributor—for information.

How can we tell an innocent inquiry from one with ill intent? You can't always judge a book by its cover. While some sources say that inquiries from local parties are generally trustworthy, statistics say terrorist groups in the immediate region can pose the greatest threat. Sometimes directing pertinent questions back to the inquirer or simply engaging the individual in conversation can help clarify the situation. Ask about the crop or usage site or about the timing of the application. Discuss equipment. Are they forthcoming about their operation and their needs? Are they just a little too persistent in their pursuit of information? If the inquiry is so odd as to merit reporting it to the authorities, gain as much information as you can about the caller. We have discussed this situation with law enforcement personnel and regulatory authorities on the local, state, and national levels, and all agree that it makes far more sense to be overly vigilant than to ignore suspicious activity. A partial list of contact numbers can be found on page 20 of this newsletter.

Heightened Awareness

Of course, it's easy to point fingers at others after the fact. Some of us, after hearing the news reports about the aerial applicator mechanic in Florida who had apparently been visited and queried by individuals with terrorist intent, disparaged the mechanic for not seeing the danger in the situation. But would we have reacted any differently had we been in his situation? The time has come to be vigilant, not out of fear, but out of respect for our responsibilities. The e-mail exchange described above is an example of a suspicious activity that any one of us might have brushed off six months ago, yet today we believe that

such an inquiry bears investigation. We hope that anyone in a similar situation would react in the same way.

Examples of other suspicious behaviors (adapted from the resources listed at the end of this article) might include someone engaging in any of the following behaviors:

- purchasing large amounts of a highly toxic chemical with cash;

- asking specific questions about toxicity of a chemical;

- being overly curious about a particular detail regarding application equipment (e.g., tank size, spray range);

- loitering near pesticide storage areas without a good reason for being there; or

- presenting strange-looking (possibly altered) license documentation or other credentials.

Let your instincts, training, and good sense be your guide when it comes to dealing with the public. And please keep these basic responsibilities in mind:

Secure agrichemicals and application equipment.

Stay alert.

Report suspicious and inappropriate activities to the authorities.

Carol Ramsay coordinates pesticide applicator education activities in Washington State. Her office is on the Pullman campus of WSU and she can be reached at (509) 335-9222 or ramsay@wsu.edu. Dr. Catherine Daniels is the manager of the Pesticide Information Center on the Tri-Cities campus of WSU. She can be reached at cdaniels@tricity.wsu.edu or (509) 372-7495.

Carol Ramsay, Pesticide Education Specialist; Dr. Catherine Daniels, Pesticide Coordinator, WSU

Checklist for Responsible Pesticide Ownership and Storage

- Secure all pesticides; lock storage areas (where fire codes permit).
- Secure all application equipment.
- Choose storage areas not easily vandalized or destroyed.
- Know who has access (keys) to your pesticides.
- Post all storage areas (WSDA requires locking and posting signal words: DANGER-POISON).
- Inspect storage areas on a regular schedule.
- Inventory your stock and records on a regular schedule; have your inventory readily available for authorities.
- Maintain complete and proper Personal Protective Equipment (PPE) items for all employees.
- Make pesticides available to authorized parties only.
- Report any suspicious or inappropriate activity (unusual purchases, illogical behavior) or inquiries immediately.
- Report theft of pesticides or equipment immediately.
- Apprise employees of these concerns; empower them to report suspicious or inappropriate activity.

Resources for Further Information

Idaho State Department of Agriculture, Pesticide Security, Special Issue, Oct. 5, 2001. <http://www.agri.state.id.us/PDF/Ag%20Resources/Updates%2010-4-2001.pdf>.

U.S. Department of Health and Human Services, Agency for Toxic Substances and Disease Registry (ATSDR), Industrial Chemicals and Terrorism, <http://www.techstuff.com/Terror/terror.htm>.

U.S. Environmental Protection Agency, Chemical Accident Prevention: Site Security, Feb. 2000, <http://www.epa.gov/swercepp/p-small.htm#alerts>. For questions about this Safety Alert, contact George Hull at (202) 564-9469.

U.S. Environmental Protection Agency, Office of Prevention, Pesticides and Toxic Substances, Dennis Deziel, (202) 260-2913.

U.S. Department of Transportation, Emergency Response Guidebook, <http://hazmat.dot.gov/gydebook.htm>.

U.S. Department of Transportation, Safety Alert Bulletin, Hazmat Transportation Community Urged to Increase Safety Measures, <http://hazmat.dot.gov/pubtrain/safe9-01.pdf>.

Washington State Department of Agriculture, Pesticide Management: Storage, <http://www.wa.gov/agr/pmd/pesticides/storage.htm>.

Washington State Emergency Management Division, Home Page, <http://www.wa.gov/wsem>.

Crop Duster Concerns

NW Aerial Applicators Respond to FBI, FAA

Perhaps you didn't have any close friends or relatives in New York, Washington D.C., or Pennsylvania on September 11, 2001. Perhaps you knew no one on American Airlines flights 77 or 11 or United Airlines flights 93 or 175. Perhaps, like many of us, you were able to hold the horror at arm's length and take President Bush's advice to "get on with business," resuming your normal work and personal activities as fully and as quickly as possible.

Then came the ban on crop dusting. Those of us in the agricultural community could no longer pretend we weren't affected.

Grounding "Crop Dusters"

How did aerial applicators become involved in anti-terrorist efforts? (*ED. NOTE: While those of us in the industry know the correct, and more accurate, term is "aerial applicators," the media continues referring to these aircraft and the individuals who operate them as "crop dusters," regardless of the fact that precious little "dust" of any type is used in modern aerial crop protection.*)

In the immediate aftermath of the September 11 terrorist attacks, ALL civilian aircraft were prohibited from flying. This included passenger airlines, recreational aircraft, air cargo transporters, and any other airborne craft. On Friday, September 14, agricultural aircraft were released to resume operations. In response to Federal Bureau of Investigations (FBI)'s information that a suspected terrorist had been arrested on an immigration violation in August and that he possessed information pertaining to agricultural aircraft, aerial applicators were grounded again on Sunday, September 16. This precautionary measure was suspended and agricultural aircraft were allowed to resume operations on Monday, September 17. Certain restrictions were put in place that kept agricultural aircraft clear of metropolitan zones.

In the week that followed, the potential for crop dusters to act as weapons was examined from every conceivable angle. Could such aircraft disperse toxins? Biological weapons? A senior terrorism official

from Washington, D.C. was quoted as saying, "a crop-duster would provide a crude but deadly delivery system" for such agents. A subsequent two-day precautionary grounding took place Monday and Tuesday, September 24 and 25. The flight suspensions and restrictions originate as suggestions from the FBI to the Federal Aviation Administration (FAA), which in turn passes regulations down to the various aircraft associations, including the National Agricultural Aviation Association (NAAA), the organization representing aerial applicators. NAAA has cooperated fully with all FBI suggestions and FAA regulations.

Aerial Application in the Pac NW

The Pacific Northwest produces an enormous variety of agricultural commodities. Our diverse selection of minor crops necessitates a range of protection strategies, including aerial application. Such a diversity of crops, climate zones, and cropping systems results in an aerial application industry that employs a wide variety of aircraft and application equipment.

According to Guy "Jock" Warren, Director of the Association of Washington Aerial Applicators, applicators in the Pacific Northwest fly "everything from the simplest piston-engine planes to more complex turbo-prop aircraft." Even more diverse is the range of application equipment they use. Tank sizes, pumps, nozzles, and agitators vary from applicator to applicator and crop to crop.

A source who wished to remain anonymous told *AENews* that this diversity of equipment was sufficient to bewilder and thwart most would-be terrorists. In addition to the inherent difficulty of starting and flying many agricultural aircraft, this source felt that the customized application system employed by each applicator would be sufficiently unique to confound an unauthorized user.

Warren disagrees. While he admits that the stick-controlled (as opposed to yoke-controlled) configuration of virtually all Northwest applicator aircraft is far from standard among modern aircraft in general, it is

Sally O'Neal Coates, Editor of Research Publications, WSU

not so unusual or complex that a mechanically inclined or resourceful individual could not figure it out. Most applicator aircraft are the style known as "tail-draggers" because they have a wheel under the tail and a high-nose, low-tail posture. Such aircraft were common in years past and are still flown in many parts of the world. Warren points out that the terrorists who planned and executed the attacks on the World Trade Center and the Pentagon knew how to do their homework. "They [the terrorists] have initiative and they have patience," he cautioned.

Warren believes that we should not underestimate their intelligence and resourcefulness with respect to the alleged complexity of the instrumentation or application apparatus, either. While many applicator aircraft contain a great deal of customized equipment including radios, global positioning systems (GPS), and individualized application technology, these items are not beyond the grasp of an intelligent and determined individual.

With the aviation industry on high alert regarding unusual activities and inquiries, some aerial applicators argue that it would be difficult for an individual with suspicious motives to receive flight training. Given the flight simulators and other teaching aids widely available, a would-be pilot could probably acquire the necessary knowledge without attracting attention.

What Are the Risks?

So, is the aerial application industry a "sitting duck" for terrorists? Hardly. But to understand the potential threat, we need to examine the possible ways an aircraft could be used to cause harm.

Dispersal of biological agents. It is theoretically possible that biological weapons (e.g., diseases) could be deployed by a crop duster. This theoretical possibility does not take into consideration the biological properties of the disease agents (Are they liquid or water-soluble? Can they live under application temperatures and conditions?). Most importantly, would this be an effective way to launch a biological attack?

Would another method (another type of aircraft, another mode of transportation, or delivery through the food system) be more effective?

Aircraft as bomb. An applicator aircraft could be used as a suicide bomb. "When the concern arose," said Jock Warren, referring to the FAA and NAAA contacts to Washington State aviators, "we were thinking about those 200, 300-gallon hoppers [chemical tanks on applicator aircraft], some up to 800 gallons." Filling such a tank with an explosive could indeed affect an explosion. But, again, is this an effective terrorist weapon compared to the many alternative means of creating an explosive device?

Food contamination. Contamination of crops with the goal of impacting humans would be a very round-about way of achieving a terrorist objective. While it is true that toxins could be applied to crops, most crops are processed or handled in a way that would minimize or destroy toxicity before it reached the consumer.

Crop sabotage. Disgruntled factions could wish to destroy crops by applying a desiccant or defoliator, either to attack an individual grower or to make a statement. This very real threat, known as ecoterrorism, is nothing new and, again, could be accomplished in ways other than by air.

Pesticides as weapons. Perhaps the most realistic concern for aerial applicators is that of the wrong individuals gaining access to the toxic pesticides they have on hand, as opposed to accessing their aircraft. Most experts believe pesticides that are highly toxic present a greater threat than biological weapons.

Staying Safe and Secure

What can aerial applicators do to minimize the chance that their aircraft or their chemicals are used for the wrong reasons?

"I think we all need to be aware of securing" both planes and pesticides, says Warren. Most applicators with hangar access put their aircraft in a hangar, he

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Sally O'Neal Coates, Editor of Research Publications, WSU

says, but not everyone has that option. He encourages applicators to disable their aircraft, restrict access to it, or find another simple, practical way to inhibit its use by the wrong parties, such as parking a vehicle in front of it.

As for the agrichemicals themselves, everyone is in agreement that security is critical. Because of the licensing and training programs already in place, applicators know the gravity of mishandling toxic chemicals. Recent events serve as a reminder.

The U.S. Environmental Protection Agency (EPA) agrees. An e-mail correspondence from Jeanne Heying at EPA's Office of Pesticide Programs (OPP) dated September 21, 2001, directed to members of the American Association of Pesticide Safety Educators (AAPSE) suggested that pesticide educators and cooperative extension agents throughout the country consider re-emphasizing "SECURITY of pesticides, pesticide equipment, and related machinery" in all training and outreach information.

As for the FBI, at this writing they were content to allow the industry to continue to self-regulate, issuing this statement:

"Members of the agricultural aviation industry should continue to be vigilant to any suspicious activity relative to the use, training in or acquisition of dangerous chemicals or airborne application of same, including threats, unusual purchases, suspicious behavior by employees or customers, and unusual contacts with the public. Members should report any suspicious circumstances or information to local FBI offices."

Your local law enforcement authorities (police or sheriff) may be able to assist you as well. FBI telephone numbers can be found under the Federal government listings in most telephone directories; several FBI numbers are provided on page 20 of this newsletter. Callers are encouraged to obtain as many specific details about the suspicious activities and individuals as possible.

On October 5, the National Agricultural Aviation Association issued a statement urging the same type of vigilance and precaution Warren and others advocated. That statement is reproduced on the page opposite.

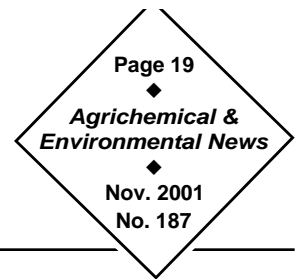
In the final analysis, aerial applicators in the Pacific Northwest are to be commended. In this time of general sacrifice and renewed patriotism, they rallied admirably, taking the concerns of their government and their neighbors seriously. In cooperating fully with FBI suggestions and FAA regulations, putting concern for national security ahead of their own livelihoods, they exhibited, as individuals and as an industry, a strength of character we can all admire.

Sally O'Neal Coates is an Editor of Research Publications at the Pesticide Information Center on the Tri-Cities branch campus of Washington State University. She is Editor of Agrichemical and Environmental News, now in its 30th year of publication. She can be reached at scoates@tricity.wsu.edu or (509) 372-PEST (7378).

REFERENCES

- Heying, J. Sept. 21, 2001. Electronic correspondence.
- Mapes, L. V., M. Carter, and D. Wilson. Sept. 25, 2001. Crop-duster ban to end; planes a potential terrorist weapon. *Seattle Times*.
- Message from FBI to agricultural aviators. 2001. National Agricultural Aviation Association: Voice of the Aerial Application Industry. <http://agaviation.org/notice.htm>.
- September 11: Chronology of terror. Sept. 12, 2001. Cable News Network LP, LLLP. <http://www.cnn.com/2001/US/09/11/chronology.attack/index.html>.
- Statement from the NAAA president. 2001. National Agricultural Aviation Association: Voice of the Aerial Application Industry. <http://agaviation.org/statement.html>.
- U.S. extends ban on crop-dusters. Sept. 24, 2001. Cable News Network LP, LLLP. <http://www.cnn.com/2001/US/09/24/inv.cropdusting.ban/index.html>.

Security Considerations for Agricultural Aircraft Operators



National Agricultural Aviation Association

The following statement was issued by the National Agricultural Aviation Association (NAAA) October 5, 2001. NAAA can be found on the Internet at <http://www.agaviation.org>. The memo is reproduced here verbatim and in its entirety.

Considering the September 11th, 2001 terrorist attacks on the United States, and the resulting federal government and national news media focus on our industry, the National Agricultural Aviation Association reminds all agricultural aircraft operators to maintain, and where necessary, improve aircraft and operations security. Having endured multiple ground stops over the last few weeks it is obvious that our ability to work and protect American agriculture is in a precarious state. We must address security concerns expressed by federal and state law enforcement agencies to insure that our aircraft, crop protection chemicals, and operations are maintained in a secure state.

NAAA recommends that, where possible, aircraft and crop protection products are stored in locked hangars with electronic security systems when not in use. Loader trucks, forklifts, or other equipment may also be parked and temporarily disabled in such a manner as to block movement of the aircraft. In cases where hangar space is not available and aircraft must be left outdoors, propeller chains, locking high strength tie down chains, or blocking equipment are practical alternatives. Outdoor security lighting is also recommended.

Operators are also encouraged to explore the possibility of installing hidden security switches to insure unauthorized aircraft starting. This, however, must be accomplished in compliance with FAA regulations governing aircraft modification.

In the case of operators who live on the premises, or have employees living on airport grounds, enhanced security lighting, alarms, and dogs are effective deterrents against criminal activity.

NAAA recommends that operators establish contact with federal and local law enforcement agencies to coordinate responses to security breaches at ag aviation facilities. Appropriate law enforcement agency telephone numbers should be posted in a prominent place and employees should be instructed to maintain enhanced security awareness. These telephone numbers should be registered with any private security company that monitors the electronic security system of an agricultural aviation operation.

Who You Gonna Call?

This SPECIAL EDITION of *AENews* discusses many aspects of terrorism that relate to agriculture and food production. Should you become aware of a potential terrorist threat or suspicious activity, report it to your local authorities (police, sheriff), or to a nearby FBI field office at once. Be prepared to provide as much specific detail as possible.

Federal Bureau of Information

- Seattle FBI Command Post, (206) 622-0460
- Portland FBI Command Post, (503) 224-4181
- National FBI Office, (202) 324-3000

For questions or to report less urgent matters, contact your state's department of agriculture:

- Idaho Department of Agriculture, (208) 332-8610
- Oregon Department of Agriculture, (503) 986-4635
- Washington State Department of Agriculture, (877) 301-4555

Additional support can be provided by:

- USDA Office of Crisis Planning and Management, (877) 559-9872, (202) 720-5711
- Washington State Emergency Management Division (253) 512-7000/7001

Other useful resources and contact information can be found on pages 12 and 15 of this issue.

Pesticide Applicator Training Courses

Washington State University provides pre-license and recertification training for pesticide applicators.

Pre-license training provides information useful in taking the licensing exam.

Recertification (continuing education) is one of two methods to maintain licensing. (The other is retesting every five years.)

Course registration (including study materials) is \$35 per day if postmarked 14 days prior to the first day of the program you will be attending, otherwise \$50 per day. These fees do not include Washington State Department of Agriculture (WSDA) licence fees.

For more detailed information, visit the Pesticide Education Program website's training page at

<http://pep.wsu.edu/education/educ.html>

or call (509) 335-2830.

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