

Chapter 2 – Prevention and Preparedness

APHIS, VS works to protect the Nation's animal health and facilitate safe agricultural trade. This chapter highlights VS programs and activities aimed at disease prevention and preparedness. These include efforts to ensure safe imports and exports, conduct regulatory functions, and prepare for animal health emergencies.

Trade Imports and Exports

The APHIS animal health mission includes safe international trade of animals, animal products, and plant imports and exports. APHIS' International Services division supports this mission in an international environment by identifying and reducing agricultural pest and disease threats while still outside of U.S. borders to enhance safe agricultural trade and to strengthen emergency response preparedness. APHIS' National Center for Import and Export prevents the introduction of diseases into the United States by issuing permits for APHIS-approved animals and products from foreign countries. APHIS develops and implements regulations, testing, and quarantines to protect U.S. animal agriculture at borders and ports, and conducts domestic surveillance and response efforts to reduce or eliminate diseases to ensure that U.S. animals and products are safe for trade.

Additionally, APHIS has been designated by the Secretary of Agriculture to take the lead in international standard-setting organization activities that are involved in animal (sanitary) and plant health (phytosanitary) issues. These standards are developed under the auspices of the World Organization for Animal Health (OIE) for animal health and zoonoses.

When foreign markets were closed to U.S. live swine and pork because of the H1N1 outbreak in April 2009, APHIS provided information about the disease and its impact as part of an overall U.S. effort to assure importers of the safety of U.S. swine and pork and to reopen those markets. This outreach included publication of two APHIS H1N1 documents: *Guidelines for Novel H1N1 2009 Virus in Swine in the US*, released on August 7¹ and the *National Surveillance Plan for Swine Influenza Virus: Including Novel H1N1 2009 Virus*, also published on August 7.² APHIS has confirmed swine cases of H1N1 in Minnesota,³ Indiana,⁴ North Carolina,⁵ and Illinois.⁶ Since this disease poses no

¹ http://www.aphis.usda.gov/newsroom/hot_issues/h1n1/downloads/Novel_H1N1_2009_Guidelines.pdf

² http://www.aphis.usda.gov/newsroom/hot_issues/h1n1/downloads/H1N1_Surveillance_Plan_2009.pdf

³ http://www.usda.gov/wps/portal/!ut/p/_s.7_0_A/7_0_1OB?contentidonly=true&contentid=2009/10/0514.xml

⁴ <http://www.reuters.com/article/idUSN0246040920091102>

⁵ http://www.usda.gov/documents/CHART-SAMPLES_FOR_CY2009_011910.pdf

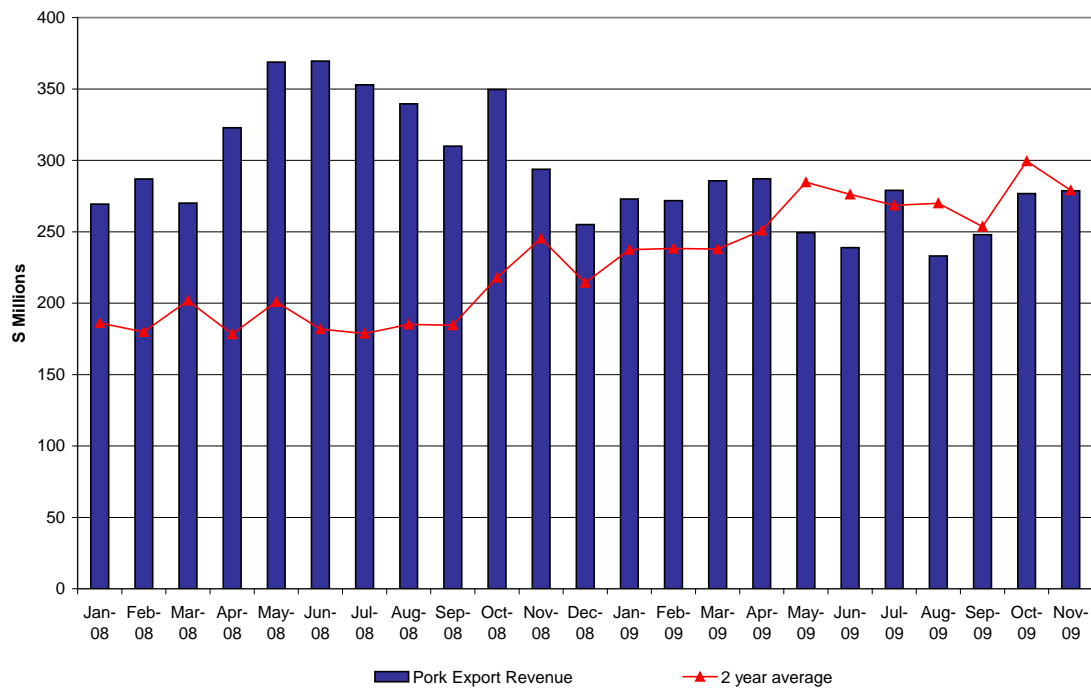
⁶ http://www.usda.gov/documents/H1N1_INFLUENZA_CHART_SAMPLES_FOR_CY2010_022210.pdf

food safety or human health risk, swine with H1N1 influenza are allowed to recover and are subsequently sent to slaughter or other farms. Restrictions on exports of live swine and pork products to the United States from Mexico were already in place because the United States does not consider Mexico to be free of classical swine fever, thereby negating the need for the United States to respond to H1N1 outbreaks in swine in Mexico.

The H1N1 outbreak in the United States caused several countries to ban imports of live swine, pork, and pork products of U.S. origin. While H1N1 predominantly affected humans, the outbreak caused concern among consumers and trading partners. This reaction was short-lived, as most trade bans were removed the following month. Several international organizations, including the OIE, advised that there is no scientific basis to restrict trade in pork and pork products with countries that have positive swine H1N1 cases.

Overall, the value of U.S. exports of live swine, pork, and pork products was lower in 2009 than 2008 levels (figure 2.1). Additionally, exports in the latter part of 2009 were lower than the previous 2 years. This decrease in exports is partially attributable to the responses of U.S. trading partners regarding H1N1.

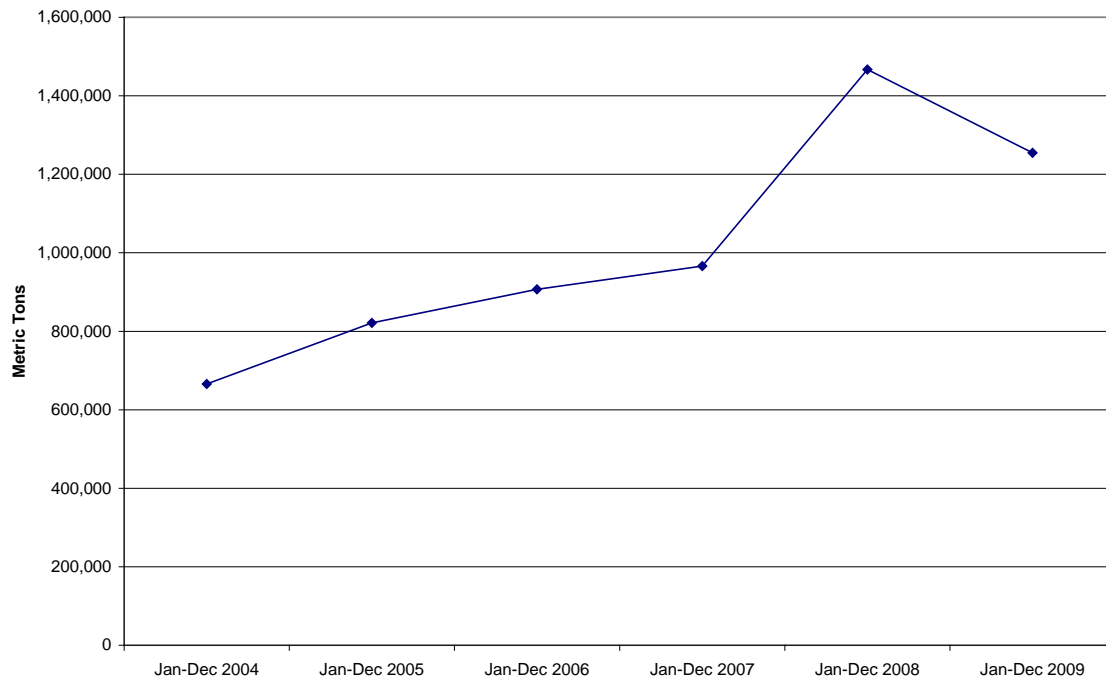
**Figure 2.1: Values of U.S. exports of live swine, pork, and pork products
January 2008–November 2009**



Prior to 2008, growth in the U.S. pork export market had begun to slow; however, in 2008, exports of pork increased substantially (figure 2.2). Part of this increase was driven by increased demand from China. In 2008, China hosted the Olympic Games, but in the previous year, China was subject to an outbreak of porcine reproductive and respiratory syndrome, also known as “blue ear disease,” which led to declines in domestic production. Therefore, China relied on increased imports to meet the higher demand in 2008 for the Olympics. While imports by China were higher than previous year imports for the first 9 months of the year, these were lower the last 3 months due to an improvement in the country’s swine herd health and the culmination of the Olympic Games.⁷ Significant increases in exports to Hong Kong, Russia, and the European Union were also recorded. Japan received the largest share of U.S. exports, at almost 30 percent.

⁷ USDA ERS. “After Strong Exports for Most of 2008, a Weaker 4th Quarter Is Expected,” *Livestock, Dairy, and Poultry Outlook*, December 18, 2008.

Figure 2.2: Quantity of U.S. pork exports, 2004–2009



Despite the increase in exports, hog prices in the United States were high in 2008 due to the increased costs of inputs, particularly corn. Prices in 2009 were lower, with price declines corresponding with the H1N1 outbreak, as well as lower input costs. The hog futures market was also impacted, as the negotiated purchase prices for market hogs fell from pre-outbreak prices as high as \$21.68 per head.

Overall, pork exports were not significantly impacted by the trade bans and consumer response to the outbreak of H1N1 in 2009 (figure 2.3). Live swine trade, on the other hand, experienced greater volatility and was well below previous year exports (figure 2.4). This is not surprising, given that most of the trade bans applied to live swine exports rather than exports of pork and pork products.

Figure 2.3: Values of U.S. pork exports, January 2008–November 2009

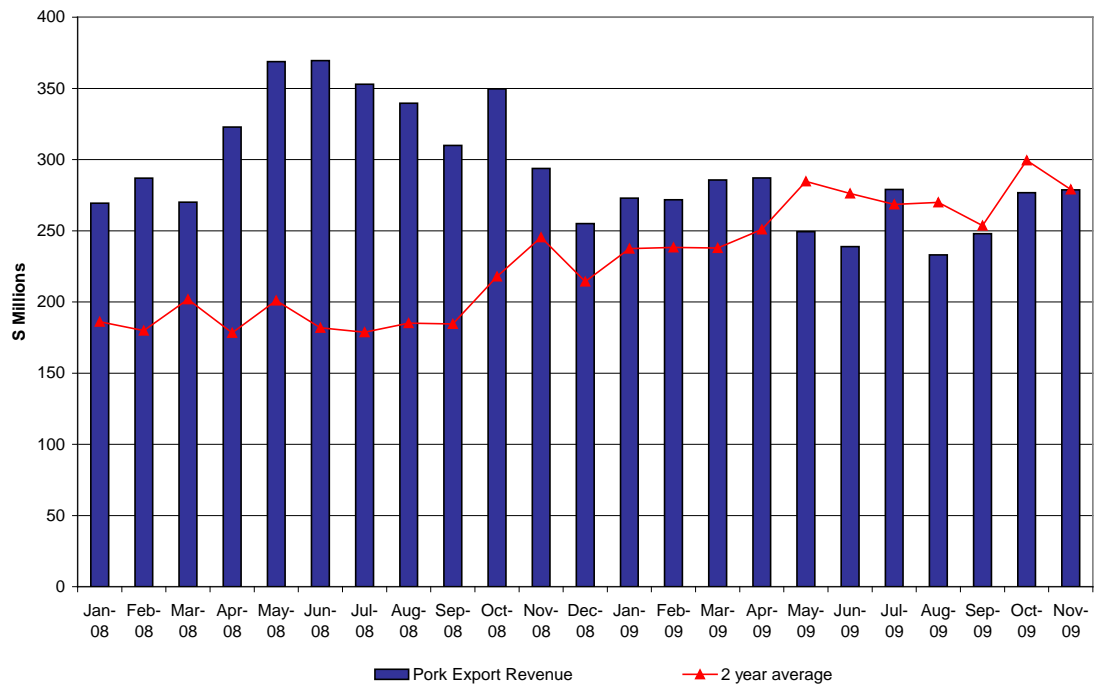
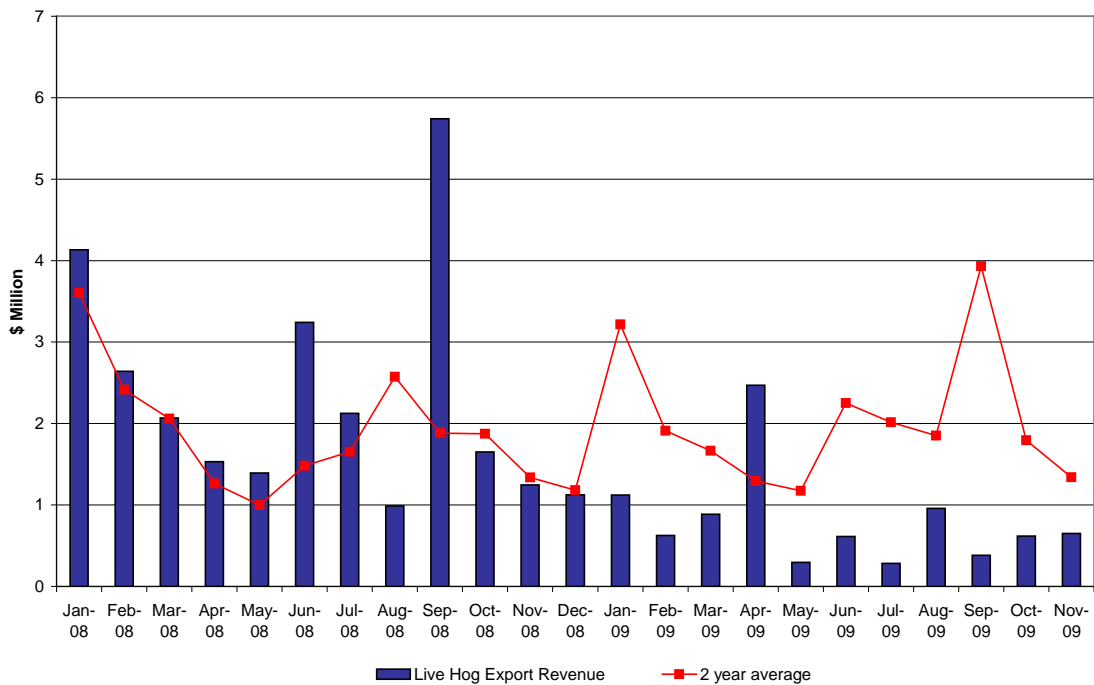


Figure 2.4: Value of U.S. live swine exports, January 2004–November 2009



While U.S. pork producers were impacted by the 2009 outbreak of H1N1, these impacts were tempered by significant gains in export markets in previous years, and the fact that bans were short-lived in most countries. Since 2008, corn prices have declined significantly, translating into lower input costs for producers. Additionally, exports are expected to rebound in the fourth quarter of 2009 with continued growth in 2010.

National Veterinary Accreditation Program

More than 10 years ago, APHIS began planning changes to strengthen the National Veterinary Accreditation Program. A final rule has been written to allow APHIS to implement significant improvements and changes to the program. Our new veterinary accreditation program will establish Web-based initial accreditation training for program applicants, and two new categories of accreditation will be based on the species of animals for which veterinarians perform accredited duties. Category I animals are species other than animals raised for food and fiber, horses, farm-raised fish, poultry, all other livestock, birds, and zoo animals that could transmit exotic animal diseases to livestock. Category II includes all animals. APHIS will also require supplemental regulatory training and renewal of veterinarians' accreditation every 3 years. Category I veterinarians will be required to complete three units of APHIS-approved supplemental training every 3 years; Category II veterinarians will complete six units every 3 years.

The program will also include certifications, through which accredited veterinarians may acquire additional training to perform specific functions such as writing Johnes' disease health certifications. These changes strengthen the important role of accredited veterinarians and provide them with better tools to meet the challenges the United States faces in disease prevention, preparedness, and response challenges—both now and in the future.

Emergency Planning and Preparedness

As leaders in animal health emergency (AHE) management, APHIS VS National Center for Animal Health Emergency Management (NCAHEM) develops strategies and policies for effective incident management and helps coordinate incident responses. As a liaison to outside emergency management groups, NCAHEM ensures that emergency management policies, strategies, and responses are current with national and international standards.

In the event of an AHE, the NCAHEM role is to:

- Provide national guidance on disease surveillance and eradication strategy

- Augment State and local resources with critical veterinary supplies, equipment, and services
- Provide safety emphasis and leadership
- Support the acquisition of resources
- Resolve administrative, financial, legal, legislative, and disease control issues
- Coordinate and disseminate information

In responding to a domestic incident of a foreign animal disease (FAD) such as highly pathogenic avian influenza (HPAI) or foot-and-mouth disease (FMD), an understanding of the roles and responsibilities of each Federal department or agency will help to promote an effective and coordinated emergency response.

The National Response Framework (NRF) is the primary mechanism for coordination of the U.S. Government's response to terrorist attacks, major disasters, and other emergencies. Federal response to the detection of a FAD such as HPAI and FMD will be based on the response structure of the National Incident Management System (NIMS) as outlined in the NRF.

During the course of a FAD outbreak, USDA may request Federal-to-Federal support (FFS) from other Federal agencies. FFS refers to the circumstance in which a Federal department or agency requests Federal resources under the NRF that are not addressed by the Stafford Act or other mechanisms. This support is coordinated by the Department of Homeland Security (DHS) using the multiagency coordination structures established in the NRF and in accordance with the NIMS.

If a FAD outbreak becomes overwhelming or catastrophic, the U.S. President may declare a Federal disaster, or the Secretary of Agriculture may request that the Secretary of Homeland Security and DHS assume lead coordination for the Federal response.

Animal Health Emergency Response Corps

VS uses many sources to obtain the veterinary personnel needed to help meet the critical staffing needs of an AHE. One such source is the National Animal Health Emergency Response Corps (NAHERC), established by APHIS in 2001 to respond to exotic disease outbreaks and other disasters that affect livestock, poultry, companion animals, and wildlife.

As of December 2009, 918 applicants have qualified for the NAHERC program; these include 394 veterinary medical officers and 524 animal health technicians who can be

granted temporary Federal personnel status and dispatched to assist with an emergency response. The Corps has nearly doubled in size since mid-2008.

One of NAHERC's many accomplishments during 2009 was participating in President Obama's "United We Serve" initiative. The purpose of the initiative was to incorporate volunteerism and community service activities into the lives of all Americans to strengthen the Nation's foundation of service.

2009 Animal Health Emergency Management Highlights

APHIS, along with public and private stakeholders, played a significant role during the outbreak of the Novel H1N1 influenza pandemic in 2009. First, APHIS accelerated implementation of the pilot swine influenza virus surveillance program that the agency had been planning with the Centers for Disease Control and Prevention (CDC). Subsequently, APHIS, the Agricultural Research Service (ARS), and the Food Safety and Inspection Service, in collaboration with CDC and State and industry officials, produced a set of "Unified Key Points" that represented consensus on vital aspects of H1N1 influenza in swine. The points emphasized the safety of pork and pork products, the value of surveillance for swine influenza viruses, and approaches to a potential finding of H1N1 influenza in U.S. swine.

APHIS and its Federal partners hosted more than 20 meetings with industry, State animal health officials, State public health officials, university researchers, and foreign agricultural attachés to develop a common animal health, public health, and food safety strategy in response to a finding of H1N1 influenza in U.S. swine. Meanwhile, the chief veterinary officers of the United States, Canada, and Mexico began discussions to reach agreement on steps the countries could take regarding trade when H1N1 is found in swine in North America.

Through a collaborative effort, the CDC, ARS, and APHIS made H1N1 influenza virus available to manufacturers for production of vaccine for swine by fall 2009; thereby accelerating the availability of the vaccine for swine producers.

APHIS also received \$25.75 million from Congress for surveillance of novel swine influenza viruses. The knowledge and results gained through this initiative will improve diagnosis, control, and management of swine influenza virus. The National Veterinary Stockpile (NVS) will use \$750,000 of the funds to purchase antivirals for emergency responders and countermeasures such as personal protective equipment.

Response Planning Update

In 2009, NCAHEM completed its Foreign Animal Disease Preparedness and Response Plan (FAD PReP). FAD PReP incorporates the principles and applied systems of the NRF, the NIMS, and the National Animal Health Emergency Management System. It also identifies the veterinary functions and countermeasures necessary to contain and control FADs in general, and specifically HPAI and FMD. As States, Tribes, and industry develop individual response plans, they can use FAD PReP as a framework to ensure that their goals, objectives, strategies, procedures, and timelines are coordinated with Federal planning.

NCAHEM continued to collaborate with DHS to define common areas for food and agriculture sector preparedness. In 2009, APHIS worked with DHS to develop the “Federal Strategic Plan to Prevent, Protect Against, and Respond to and Recover from Biological Attacks on the United States.” The plan would be implemented if a FAD were intentionally introduced in the United States.

In addition, NCAHEM’s NVS worked closely with the North American FMD Vaccine Bank in the United States to establish procedures for rapidly transitioning antigen from the bank to finished vaccine delivered to Canada, Mexico, or the United States.

In 2009, NCAHEM continued using epidemiological and economic models to assist disease managers in identifying and evaluating alternative approaches to animal health management. The Joint Modeling Analysis Center (JMAC) is an ongoing collaboration between APHIS and DHS to enhance interagency analysis of FAD scenarios, including the use of simulations and animal disease spread models to explore response strategies and countermeasure requirements.

A “Scenario Bank” was established as a repository for epidemiological modeling studies. The bank is available to DHS, USDA, and their partners. It stores and organizes model inputs and results, as well as analysis and discussion for easy retrieval. The models used to develop the banked scenarios support exercises or simulations.

2009 Modeling Highlights

In 2009, NCAHEM:

- Continued to bank scenarios in support of the JMAC
- Reviewed modeling work conducted by Lawrence Livermore National Laboratories for a risk assessment of proposed sites for the National Bio and Agro-Defense Facility

- Completed surveys of livestock production in several States to provide information for State-specific FMD models
- Developed an FMD scenario for a 2009 multi-State exercise
- Established a National Institute for Mathematical and Biological Synthesis working group to develop a network model of cattle movement and bovine tuberculosis in the United States
- Continued North American Animal Disease Spread Model enhancement and training

National Veterinary Stockpile

The NVS was established as part of Homeland Security Presidential Directive–9 (HSPD–9). Issued in February 2004, HSPD–9 establishes a national policy to defend U.S. agriculture and food systems against terrorist attacks, natural disasters, and other emergencies. The NVS mission is to deliver critical veterinary supplies to any location nationwide within 24 hours.

2009 National Veterinary Stockpile Highlights

In 2009, NVS:

- Acquired poultry depopulation equipment and placed it in strategic locations around the country for rapid deployment
- Reconfigured emergency response packages (i.e., push packages) to make them disease- and species-specific, improved content identification, and made packages more accessible to responders
- Exercised the logistics response to FMD with Canada and multiple Midwest States
- Assumed responsibility for planning the delivery of FMD vaccine from the North American FMD Vaccine Bank
- Established and maintained a Web site for planners to obtain the most recent information on the NVS
- Continued qualifying commercial partners who can provide large numbers of trained personnel with equipment to assist States that lack personnel to depopulate, dispose, and decontaminate.

National Response Preparedness Exercises

VS evaluates national response preparedness by coordinating and participating in stakeholder exercises for FADs as well as natural disasters and radiologic leaks.

Throughout 2009, VS sponsored or participated in 60 test exercises with stakeholders in various States (table 2.1).

Table 2.1: Fiscal Year 2009 animal health related test exercises

Highly pathogenic avian influenza (HPAI) or pandemic	10
Foot-and-mouth disease (FMD)	10
Rift Valley fever (RVF)	2
Exotic Newcastle disease (END)	1
Tularemia	1
Anthrax	1
Viral hemorrhagic septicemia (VHS)	1
FAD unspecified	7
Natural disaster	7
Chemical, biological, radiological/nuclear or feed-related	13
Other (biosecurity, NVS, equipment)	7
Total	60

Depopulation, Disposal, and Decontamination Collaboration

In 2009, NCAHEM continued its leadership in issues involving depopulation, disposal, and decontamination planning and discussion.

International Working Group—As a member of the QUADS countries (Australia, Canada, New Zealand, and the United States) Destruction, Disposal, and Decontamination (3D) Technical Working Group, APHIS participated in developing a database of recent, ongoing, and planned 3D research in each participating country. This effort was undertaken to help identify research gaps that can be prioritized and addressed collaboratively by member countries. The gap analysis and report (with recommendations) was submitted to the QUADS Emergency Management Working Group in December 2009 for review and approval prior to distribution.

National Security Working Group—APHIS serves as co-chair of the Decontamination and Disposal Working Group of the Foreign Animal Disease Threats Subcommittee (National Science and Technology Council). The subcommittee identifies, prioritizes, and coordinates research related to animal disease decontamination and disposal in collaboration with other Federal agencies. Due to the relationship between depopulation and disposal, the group is being expanded to include depopulation. Research projects

related to disinfectant efficacy, swine mass depopulation, and fugitive emissions from disposal processes were initiated in 2009.

Online Emergency Management Tools—The APHIS Carcass Disposal Working Group, which includes VS and other APHIS units, has developed an Emergency Management Tools Web site, including a carcass disposal decision tree and several online training modules detailing composting, onsite burial and treatment, secure transport, offsite burial and treatment, and cleaning and disinfection. Efforts are underway to improve the database function, which identifies disposal sites around the country.