

I am pleased to appear before you today to discuss the progress the Science and Technology Directorate of the Department of Homeland Security, in close cooperation with our sector-specific agency partners, is making in the nation's efforts to prevent, protect against, respond to, and recover from acts of bioterrorism against the critical infrastructures for agriculture and food.

The Department of Homeland Security's (DHS) responsibilities for agrodefense are defined in several public laws and Homeland Security Presidential Directives (HSPD), including:

? The Homeland Security Act of 2002, which includes provisions for:

- o Protection of the nation's critical infrastructures;
- o Development of biological countermeasures; and
- o Transfer of the Plum Island Animal Disease Center from the U.S. Department of Agriculture (USDA) to DHS.

? Congressional appropriations for:

- o Fiscal Years 2004, 2005, and 2006 (proposed).

? Homeland Security Presidential Directives, including those for:

- o "Management of Domestic Incidents" (HSPD-5);
- o "Critical Infrastructure Identification, Prioritization, and Protection" (HSPD-7);
- o "National Preparedness" (HSPD-8);
- o "Defense of United States Agriculture and Food" (HSPD-9); and
- o "Biodefense for the 21st Century" (HSPD-10).

## INTERAGENCY COORDINATION

DHS is responsible for coordinating the overall national efforts to enhance the protection of the critical infrastructure and key resources of the U.S., including plant and animal agriculture and food; for coordinating the development of an interagency National Response Plan (NRP) and National Incident Management System (NIMS); and for coordination of Federal resources utilized in response to or recovery from terrorist attacks, major disasters, or other emergencies. Other Federal departments and agencies have specific roles and responsibilities that are outlined in documents such as Critical Infrastructure Identification, Prioritization, and Protection

(HSPD-7), Defense of United States Agriculture and Food (HSPD-9), and Biodefense for the 21st Century (HSPD-10), and these are summarized briefly below.

In particular, HSPD-7 designates sector-specific agencies to address the unique characteristics and operating models for each sector. The U.S. Department of Agriculture (USDA) is responsible for agriculture and certain foods (meat, poultry, and egg products); the Department of Health and Human Services (HHS) is responsible for public health, healthcare, and foods other than meat, poultry, and egg products; and the Environmental Protection Agency (EPA) is responsible for drinking water and water treatment systems. The Department of Justice (DOJ), while not designated as a sector-specific agency, has the responsibility for reducing terrorist threats and investigating and prosecuting actual or attempted terrorist attacks.

Additionally, the Department of State (DOS) is the designated lead agency for the coordination of international activities related to the prevention, preparation, response, and recovery from a domestic incident; DHS coordinates with the USDA, HHS, EPA, DOJ, and other Federal agencies to ensure that the combined Federal, State, local and tribal response capabilities are adequate to respond both quickly and effectively to a terrorist attack, major disease outbreak, or other disaster affecting the national agriculture or food infrastructures; and the Technical Support Working Group (TSWG) has and continues to play a unique integrative role as an interagency rapid prototyping program for combating terrorism technologies. TSWG operates under the policy oversight of the Department of State and under the management and technical oversight of the Department of Defense, and members include DHS, USDA, the Food and Drug Administration, DOJ, DOS, the Department of Transportation, EPA, and the Intelligence Community, including identifying, validating, and prioritizing interagency requirements to combat terrorism and deliver technology solutions for detection, protection, decontamination, mitigation, containment, and disposal.

## DHS RESPONSIBILITY FOR AGRODEFENSE WITHIN MULTIPLE ORGANIZATIONAL ELEMENTS

Before specifically addressing the activities of DHS Science and Technology (S&T) Directorate, it is important to note that several other DHS organizational elements have important roles and responsibilities for agrodefense.

The Information Analysis and Infrastructure Protection (IAIP) Directorate has the lead for critical infrastructure protection (including agriculture and food); the S&T Directorate supports IAIP in this role. IAIP coordinates the National Infrastructure Protection Plan (NIPP) which includes shielding critical components of the nation's infrastructure and development of pre-event mitigation strategies. IAIP has the lead DHS role in outreach to the private sector through the interfaces provided by the Food and Agriculture Sector Coordinating Council and the Government Coordinating Council. IAIP also provides DHS intelligence assessment for the agriculture and food sectors. In addition, IAIP establishes and facilitates public-private partnerships with industry for information sharing, development and deployment of infrastructure "shields" and mitigation strategies and to reduce the overall risk to the

infrastructure from terrorism.

The Emergency Preparedness and Response Directorate coordinates the National Response Plan (NRP) and the National Incident Management System (NIMS). The NRP includes Emergency Support Functions (ESFs) to provide Federal resources during a response, including those for agriculture and natural resources (ESF-11, USDA lead) and health and medical services (ESF-8, HHS lead); and Support Annexes to ensure efficient and effective incident management, including those for science and technology (DHS S&T Directorate lead).

The Border and Transportation Security Directorate has a major role in mitigation strategies for agrodefense, including border and cargo inspections of agriculture and food products entering the U.S.

### S&T DIRECTORATE RESPONSIBILITY FOR AGRODEFENSE

Within the S&T Directorate, agrodefense is a key thrust in the Biological Countermeasures Portfolio, whose mission is to provide the understanding, technologies, and systems needed to protect against biological attacks on the nation's population, agriculture, or infrastructure. Within this mission, the S&T Directorate has the lead role for overall coordination, intelligence support, early detection and attack analysis, and bioforensics analysis and works closely with its sector-specific agency partners on agrodefense (USDA, HHS) and decontamination (EPA).

Our initial emphasis is on high consequence threats, as exemplified by an initial set of reference scenarios, including those for contagious and non-contagious aerosols, foreign animal disease (e.g., foot-and-mouth disease (FMD)), bulk food contamination, and crop defense (e.g., soybean rust). For each scenario, decision support tools guide our investments and enhance coordination, including:

? End-to-end systems studies to develop requirements and guide research and development investments;

? Epidemiological and economic models (e.g., for FMD), to explore intervention strategies and options for detection and response; and

? Crisis action planning and tabletop exercises to clarify agency roles and responsibilities.

Such exercises for FMD will be especially important, because internal DHS roles and responsibilities map to multiple DHS organizational elements (see above), and this will be the first time they have been exercised since the Department was created. In addition, new national frameworks for coordination (NIPP, NRP, NIMS) and tools, such as the FMD model and dynamic simulation of critical infrastructure, are now available. We plan to exercise internal DHS roles in an FMD scenario during FY 2005 and to exercise interagency roles of DHS with our sector-specific agency partners during FY 2006.

### Biosurveillance

A major new interagency initiative is the National Biosurveillance Integration System (NBIS),

whose goal is to enhance early detection and characterization, provide situational awareness to guide response, and share information among partners.

NBIS will provide for the integration of information provided by Federal agencies for health surveillance (human, animal, and plant), environmental monitoring (air, agriculture, food, and water), and intelligence and threat information.

The S&T Directorate led and funded the conceptual design effort for NBIS during FY 2004, and DHS IAIP is leading and funding the implementation process.

## THE S&T DIRECTORATE'S ROLE IN AGRODEFENSE RESEARCH AND DEVELOPMENT

The S&T Directorate has a significant role in the coordination of research and development under HSPD-9, including:

- ? Acceleration and expansion of the development of current and new veterinary countermeasures;
- ? Developing with USDA a plan to provide facilities for research and diagnostic capabilities for foreign animal and zoonotic diseases; and
- ? Establishing new university centers of excellence for agriculture and food security.

In 2003, the S&T Directorate and USDA (Agricultural Research Service [ARS], and Animal and Plant Health Inspection Service [APHIS]) began developing a joint strategy for foreign animal disease. One of the first goals of the strategy is to develop veterinary countermeasures for foot and mouth disease. Following the process laid out in the strategy, ARS has the lead for basic research and early development of vaccines and immunomodulators (antivirals). Potential candidates are then transitioned to DHS for continued development with industry. Once appropriate products are developed, APHIS supplies them to the National Veterinary Stockpile. Interagency coordinating meetings were held as recently as May 2005 to review progress on the joint strategy.

As part of the integrated biodefense complex, the S&T Directorate operates the Plum Island Animal Disease Center (PIADC) and two Homeland Security (HS) Centers of Excellence in agricultural security described below.

### Plum Island Animal Disease Center

PIADC is a critical national asset for addressing foreign animal diseases. This strategy includes programs on:

- ? Net assessment of the foreign animal disease threat;
- ? Vaccines and therapeutics;

- o Improved current vaccines (onset of immunity, adjuvants);
- o Development of next-generation vaccines and immunomodulators; and
- o Transition of promising candidates to industry partners for full product development.

? Assays and diagnostics:

- o National and international validation;
- o Enhanced diagnostics capability and surge capacity; and
- o A new bioforensics capability.

The overall goal of this strategy is to expedite the transition of new validated diagnostics to the USDA National Animal Health Laboratory Network (NAHLN) and new vaccines and immunomodulators to the USDA National Veterinary Stockpile, as well as increasing surge capacity at critical nodes of the response infrastructure.

In addition to these research and diagnostics programs, the S&T Directorate has responsibility for the maintenance and operations of the PIADC facilities, including necessary upgrades and enhancements of facilities and security.

To facilitate overall coordination of these programs at PIADC, a Board of Directors has been established which is chaired by the S&T Directorate and includes the administrators of both USDA ARS and APHIS. In addition, the Office of Science and Technology Policy's National Science and Technology Council recently established a new Subcommittee on Foreign Animal Disease Threats which is co-chaired by USDA and the S&T Directorate and provides a valuable new interagency forum for cooperation.

#### University Centers of Excellence

The mission of the S&T Directorate's University Programs is to stimulate, coordinate, leverage, and utilize the unique intellectual capital in the academic community to address current and future homeland security challenges and to educate and inspire the next generation of scientists and engineers dedicated to homeland security. The Homeland Security Centers of Excellence provide independent, cutting-edge research in academia for focused areas of homeland security research and development.

Established HS Centers of Excellence include those for:

? Risk and Economic Analysis of Terrorism Events;

? Foreign Animal and Zoonotic Disease Defense;

? Food Protection and Defense; and

? Behavioral and Social Aspects of Terrorism and Counter-Terrorism.

Each Center is selected on a competitive basis, and each grant is for three years. Each Center has a role in addressing bioterrorism, and two are specifically aligned with addressing agroterrorism as described below.

Texas A&M University and its partners from the University of Texas Medical Branch, University of California at Davis, and the University of Southern California will receive funds over the course of the next three years for the study of foreign animal and zoonotic diseases. The Center, known as the National Center for Foreign Animal and Zoonotic Disease Defense, is working closely with partners in academia, industry, and government to address potential threats to animal agriculture, including FMD, Rift Valley fever, avian influenza, and brucellosis. The FMD research is being conducted in close collaboration with DHS's PIADC and includes work on new rapid diagnostics for foreign animal and zoonotic diseases.

DHS is providing the University of Minnesota and its partners, Michigan State University, University of Wisconsin at Madison, North Dakota State University, Georgia Institute of Technology, and the University of Tennessee at Knoxville with funds over the course of the next three years to establish best practices and attract new researchers to manage and respond to food contamination events, both intentional and naturally occurring. The University of Minnesota's National Center for Food Protection and Defense addresses agricultural security issues related to post-harvest food protection, including developing a prototype food event modeling system, new risk communication approaches to minimize the potential impact of food contamination events, and realistic decontamination scenarios involving surrogate agents and food matrices.

Both university centers are coordinating their efforts of those of the S&T Directorate, the IAIP Directorate and the Food and Agriculture Government Coordinating Council.

Proposals are currently under review for a fifth DHS Center of Excellence on the topic of High Consequence Event Preparedness and Response.

In addition to the University Centers of Excellence, the Department of Homeland Security's University Programs and the EPA's Science to Achieve Results (STAR) Program are reviewing proposals for a research Center of Excellence focused on an area of high priority to both agencies: microbial risk assessment for Category A bio-threat agents.

#### Accomplishments and Planned Activities

In FY 2004 and FY 2005, the S&T Directorate, in coordination with its USDA and HHS partners:

? Developed and submitted reports to Congress on a research strategy for foreign animal disease, as well as a comprehensive strategy for combating agroterrorism.

? Continued operation of PIADC, with essential upgrades to the facility and its security.

? Conducted end-to-end systems studies for FMD, bulk food contamination, and crop defense (soybean rust), and initiated a system study for highly pathogenic avian influenza that identify requirements, R&D gaps, potential architectures, and trade-offs for each scenario.

? Developed a national coupled epidemiological and economic model for FMD, and will conduct an internal DHS tabletop exercise for FMD during FY 2005.

? Initiated R&D programs to:

- o Characterize the current FMD vaccine bank, including the time-to-onset of the immune response;

- o Evaluate preventive and therapeutic vaccine candidates for FMD;

- o Establish an agricultural bioforensics capability; and

- o Develop, in coordination with USDA's National Animal Health Laboratory Network, an integrated platform for high-throughput multiplexed assays for FMD that can analyze thousands of samples per day in support of response to a suspected case or an outbreak.

## NATIONAL BIO AND AGRODEFENSE FACILITY

PIADC is a unique and critical facility for the nation's foreign animal disease defense and celebrated its 50th anniversary in 2004. Thus, the facility is now well beyond its originally planned life span, and is in need of recapitalization.

In FY 2005 the S&T Directorate is funding a conceptual design study for a next-generation facility, the National Bio and Agrodefense Facility (NBAF). The goal of this study is to determine the programmatic drivers for the necessary size and scope of the facility and the research and development to be conducted there. Three major programmatic themes are being considered:

? The historical PIADC mission for foreign animal disease research in livestock, with needs anticipated over the lifetime of the new facility (approximately 40 years);

? The study of zoonotic diseases, including associated requirements for specific biosafety levels of containment; and

? Testing and evaluation required for licensure of medical countermeasures in conjunction with

HHS.

DHS is working closely with its interagency partners throughout this planning process, including USDA and HHS.

The proposed FY 2006 budget for DHS includes \$23M for the architectural and engineering design and pre-construction costs of the NBAF.

#### CONCLUSION

The S&T Directorate's programs conducted within DHS fully support the national agrodefense program as stated in the presidential directive Defense of United States Agriculture and Food and other Homeland Security Presidential Directives. Moreover, they are conducted in an active collaboration with other Federal departments and agencies having a role in meeting this national priority and are focused on reducing the threat of a biological attack against this nation's agriculture and food critical infrastructures.

This concludes my prepared statement. With the Committee's permission, I request my formal statement be submitted for the record. Mr. Chairman, Senator Harkin, and Members of the Committee, I thank you for the opportunity to appear before you today and I will be happy to answer any questions that you may have.