Statement for the Record

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Good morning Chairman Collins, Senator Lieberman, and Members of the Committee. I am pleased to appear before you today to report on the progress the Science and Technology Directorate of the Department of Homeland Security is making in the areas of prevention, protection, response and recovery to acts of agroterrorism against the American people. The Department's mission is to protect America from terrorist threats or strikes — including those directed at agriculture and food.

I want to begin by giving you a brief overview of the structure of the Department and its Science and Technology Directorate, so that you may better understand where the agricultural component fits into the overall picture.

The Department mobilizes the efforts of what used to be 22 federal agencies under a common mission and chain of command. This greatly enhances the Department's ability to react swiftly and effectively to threats against our nation. It also facilitates better coordination with homeland security partners in the private sector and state and local governments including first responders.

DHS Directorates

The Department has four key interconnecting directorates and each is involved with agricultural aspects of homeland security. The Border and Transportation Security Directorate is responsible for securing our borders, airports, ports and other modes of transportation. This directorate has a primary interface with six other agencies, including the U.S. Department of Agriculture's Animal and Plant s Health Inspection Service (APHIS). The Emergency Preparedness and Response (EPR) Directorate takes the necessary steps to ensure that we are prepared for and able to recover from a natural disaster or terrorist attack. EPR has direct ties to both Health and Human Services and the U.S. Department of Agriculture in the area of biological threats to food products.

The Information Analysis and Infrastructure Protection (IAIP) Directorate gathers and assesses intelligence and information about threats and vulnerabilities from other agencies and takes preventive and protective action. Agriculture and food are two of 14 Critical Infrastructure and Key Assets identified in the President's National Strategy for Homeland Security. As such, they fall into the domain of the IAIP Directorate. The Department of Commerce's Critical Infrastructure Assurance Office (CIAO) and the FBI's National Infrastructure Protection Center were folded into this directorate, providing additional resources to gather and assess information.

The Science and Technology Directorate (S&T) serves as the primary research and development arm of DHS and its priority is to find technology solutions to meet pressing homeland security challenges. S&T is specifically tasked with marshalling the intellectual capital of the engineering and scientific communities to develop fresh and effective approaches to safeguard the American public. The Plum Island Animal Disease Center (PIADC) became part of the Department of Homeland Security as mandated by the Homeland Security Act on June 1, 2003. S&T collaborates with APHIS and the USDA's Agricultural Research Service (ARS) on research at PIADC.

These four directorates are designed to exchange information and coordinate operations to ensure that the Department functions effectively on a day-to-day basis and that it is prepared to act decisively in the event of a terror threat or strike or natural disaster.

In its planning, the S&T Directorate has been guided by the Homeland Security Act of 2002, current threat assessments, our understanding of existing capabilities or those that can be anticipated in the near term, and by the priorities outlined in the President's National Strategy for Homeland Security. In short, we are shaping the Directorate to serve as the Department's hub for research and development for exposing and countering chemical, biological, radiological, nuclear, high-explosive and cyber threats against the United States and its people.

Progress in Operations of Key Offices

The Department of Homeland Security's S&T Directorate commenced operations in March 2003. While we are a start-up operation that is still evolving, I'm pleased to report we have made good progress in short order. In October 2003, S&T's Office of Systems Engineering and Development (SED) was stood up, the last of the Directorate's four key offices to become operational. Directors with strong credentials have been appointed to each office and we continue to strategically add highly skilled technical, professional and support staff. In addition to SED, the offices of the Directorate include Plans, Programs and Budgets; Homeland Security Advanced Research Projects Agency; and Research and Development.

The Science and Technology Directorate is implementing its activities through focused portfolios that address chemical, biological, radiological and nuclear and cyber threats; support the research and development needs of the operational units of the Department; and receive valuable input from private industry and academia as well as national and Federal laboratories.

Office of Plans, Programs and Budgets

The Office of Plans, Programs and Budgets (PPB) is operating under my supervision. I have organized this office into several portfolios, each of which is focused on a particular discipline or activity. Taken together, these portfolios span the breadth of the Directorate's mission. A key mission for the S&T Directorate is to act as the Department's focal point and advocate for countermeasures to weapons of mass destruction. Therefore, we have portfolios that address countermeasures for chemical, biological, radiological, nuclear, cyber, and high-explosives threats. A further key mission for the Directorate is to provide the research, development, testing and evaluation for our customers in the other directorates. And so we have portfolios focused on borders and transportation security, intelligence analysis and critical infrastructure, and emergency preparedness and response. Finally, there is a portfolio dedicated to

developing standards for technologies for homeland security to better aid Federal, State, and local agencies in being smart buyers of homeland security technologies.

Homeland Security Advanced Research Projects Agency

In accordance with Title III of the Homeland Security Act, we have created the Homeland Security Advanced Research Projects Agency (HSARPA) in an effort to develop viable concepts for advanced technologies to support every aspect of the Homeland Security mission. HSARPA's Chemical/Biological Technical Office is fully operational and is presently engaging the private sector to develop detection systems and countermeasures for chemical and biological threats.

In 2004, more than 55 percent of the S&T Directorate's funding will go directly to the private sector through HSARPA or other Science and Technology entities, with about 90 percent of these funds dedicated to near-term technologies that can be developed quickly. The remaining 10 percent is available for longer-term revolutionary research for breakthrough technologies.

HSARPA will similarly address radiological, nuclear and high-explosives countermeasures. In addition to the private sector, our procurement activities will seek to engage our nation's research and development community, including federally funded research centers, universities and other government partners.

Office of Systems Engineering and Development

The Office of Systems Engineering and Development (SED) leads the implementation and transition of large-scale or pilot systems to the field through a rapid, efficient and disciplined approach to project management.

In some cases, military technologies could be candidates for commercialization, but rigorous systems engineering processes need to be applied to ensure a successful transition. The role of SED is to identify and then in a disciplined manner retire risks associated with such technologies to ready them for commercial applications. In doing so, the office must view each technology through the prism of affordability, performance and supportability — all critical to end-users. Products must be user friendly, have a minimum of false alarms, require little or no training and consistently provide accurate results. SED will demonstrate and test solutions before they are released to the field, and will validate that those solutions meet user expectations.

Office of Research and Development

The S&T Directorate's Office of Research and Development (ORD) provides the nation with an enduring capability for research, development, demonstration, testing and evaluation of technologies to protect the homeland. This office also provides stewardship to the scientific community to preserve and broaden the leadership of the United States in science and technology.

ORD is responsible for the operations of the National Biodefense Analysis and Countermeasure Center (NBACC). NBACC is dedicated to protecting health and agriculture by advancing the scientific community's knowledge of bioterrorism threats and vulnerabilities. NBACC integrates facilities and technical expertise in biodefense through a hub-and spoke-structure. The NBACC hub is based on the National Biodefense Campus at Fort Detrick in Maryland. The spokes include the Plum Island Animal Disease Center and facilities and programs at the national and DHS laboratories, universities, private sector and other government agencies.

Biodefense characterization, bioforensics and agricultural security are the key programmatic thrusts of NBACC that are executed through PIADC and four other research and operations centers: Biothreat Assessment Support Center; Biodefense Knowledge Center; Bioforensics Analysis Center; Bio-Countermeasures Testing and Evaluation Center; and the Plum Island Animal Disease Center.

Securing the Agricultural Infrastructure

The Department and S&T must consider and address a number of factors in its approach to protecting the agricultural infrastructure. The United States agricultural and food system is a large, nationwide system of production, processing and distribution. The opportunities, both geographically and within the system, for intentional introduction of biological agents introduce additional complexity into securing these critical components of the national infrastructure.

The historical approach to keep foreign animal diseases such as foot-and-mouth disease out of the continental United States has been to secure and protect our borders against the unintentional introduction of animals carrying such diseases. A bioterrorism event, on the other hand, would be the result of the intentional introduction of one or more biological agents at multiple locations within our borders simultaneously.

Therefore, we have a need to clearly understand the scope and scale of this challenge, and to develop a national strategy and the necessary tools to prevent, detect, respond, and recover from such potential events.

Through their research and regulatory programs, the USDA, and the Food and Drug Administration (FDA) provide the foundation for national agricultural animal and plant health and for public health. USDA has established programs on foreign animal diseases and their pathogens; zoonoses (i.e., diseases infecting both humans and animals); diseases of domestic animals and their pathogens; vectors and reservoirs of animal and human disease pathogens; plant/crop diseases and their pathogens; and food safety. The FDA also has a strong research program to address food safety and security concerns.

The S&T strategy is thus designed to overlay protection from agricultural terrorism onto this foundation. Thus, two of the four high-consequence biological scenarios that

comprise the research programs of the S&T Biological and Chemical Countermeasures Portfolio address major concerns for agriculture and food — specifically, the deliberate introduction of foot-and-mouth disease into the United States, and a classified food security event.

Plans for FY 2004 call for defining and elaborating on the technical and research requirements and gaps for these scenarios by:

- End-to-end systems studies and analyses which focus S&T programs on developing and fielding technologies that will contribute to improved agricultural biosecurity. Such studies include the use of epidemiological and economic models, and planning and simulation tools and table top exercises, to explore and better understand the requirements for policy and decision making as well as R&D in the overall strategy

- Development of a joint DHS/USDA national strategy and R&D program for foreign animal diseases, with an aggressive timetable for deployment of next-generation veterinary diagnostics, vaccines, and anti-virals

We expect that the lessons learned from a thorough analysis of the initial two DHS biological scenarios will provide valuable perspective, approaches, and tools to apply to additional scenarios, in collaboration with our USDA partners.

Foreign Animal Disease & Plum Island Animal Disease Center

Foot-and-mouth disease (FMD) virus infects cloven footed animals such as cattle, swine, sheep**,** and deer, and is one of the most infectious biological agents known. It is not infectious to humans.

The U.S. has been free from FMD since 1929. As the isolation and manipulation of the FMD virus requires low- to medium-range technology, this pathogen is of potentially high consequence if intentionally introduced to U.S. livestock.

Research on the intact FMD virus is currently restricted to the PIADC. At Plum Island, the research program led by ARS and the diagnostic program conducted by APHIS are unique. Therefore, PIADC is recognized as a critical national asset that is essential for protecting the U.S. livestock that is vital to the nation's economy and food supply.

S&T is currently developing a collaborative strategy for the operations and research programs on Plum Island with colleagues at APHIS and ARS and customers and stakeholders representing key industry groups. This strategic planning includes:

- A 60-day study of facilities and security status and requirements at PIADC

- End-to-end analysis of the R&D requirements for a comprehensive program on FMD, including identification of research and technology gaps and milestones for

deployment of diagnostics, vaccines, and anti-virals over 1-, 3, and 5-year timeframes

- Facilities, staffing, and funding required to support this research activity
- Coordination of the PIADC program with the National Biodefense Analysis and Countermeasures Center (NBACC) at the Ft. Detrick Biodefense Campus
- Identification of critical inter-agency and inter-departmental coordination required for incident, crisis, and consequence management and communications for the facility
- Development of a joint DHS/USDA comprehensive national strategy for foreign animal disease with emphasis on FMD, for reporting to Congress in January as required by both the DHS and USDA Appropriation Committees.

The joint DHS/USDA comprehensive national strategy for foreign animal disease includes the drafting of a Technology Development Roadmap. The Roadmap includes the identification of major technology requirements (and gaps), with major milestones during Year 1, Years 1-3, and Years 3-5 in the following areas

- Development, and, if cost effective, deployment of a prototype surveillance capability, along with development of outbreak response plans;
- Development at NBACC of a forensics capacity for agroterrorsim threats;
- Development and characterization of a strain/sample archive;
- Development of rapid detection capabilities;
- Development of new, rapid assays
- Development of new adjuvants, antivirals, immune stimulators, and novel vaccines

These activities are significant new investments to enhance the national capacity to respond to agroterrorism.

What is S&T doing?

Consistent with the Roadmap, current S&T initiatives and activities on agricultural biosecurity include:

- Conducting end-to-end systems studies to fully understand the scope and R&D requirements for foreign animal disease and food security scenarios. This includes models, simulations, and tabletop exercises to explore the epidemiological and economic consequences and trade-offs following policy and crisis management decisions.
- Developing key enabling technologies and tools such as rapid assays and diagnostics to prevent, detect, respond, and recover from the intentional or unintentional introduction of biological agents, initially for human/public health (e.g., BioWatch), which will/can have future applications in the national agriculture and food systems.

- Collaborating with ARS, APHIS and the FDA to enhance national plans for mitigation and response to high-consequence threats, with particular attention to identifying and resolving key decision checkpoints and inter-departmental coordination issues in the national response plan, e.g., decisions to stop movement, cull infected herds, and vaccinate to rapidly contain a foreign animal disease outbreak.
- Reviewing and, as appropriate, remediating the key decision checkpoints and inter-departmental coordination facilities, security, and critical operational requirements for PIADC, including systems assessments, plans, and timetable for corrective actions
- Development of an advanced detection/surveillance systems, known as the BioWatch Program, to identify pathogens of concern for human/public health. We are exploring the potential implementation of this technology in agricultural scenarios.
- Performing end-to-end systems studies with USDA and FDA in food security to specify, design, and guide development of detection/surveillance systems at critical nodes in food production systems
- HSARPA Broad Area Announcement and awards via the Technical Support Working Group for new detection technologies for biological agents (e.g., botulinum toxin)
- Establish university-based Homeland Security Centers of Excellence, including one dedicated to agriculture and food in FY 2004
- Leverage technical expertise and national infrastructure of the federal government laboratories and private sector to address critical national requirements

What are S&T and USDA doing together?

Important current areas of collaboration between S&T and USDA include:

<u>PIADC Interagency Agreement</u>

- DHS operations and maintenance
- DHS foreign animal disease programs in collaboration with ARS, and with APHIS for bioforensic analyses supporting attribution of agro-bioterrorism threats
- Joint R&D programs on FMD diagnostics
- APHIS FMD vaccine bank, foreign animal disease training and diagnostics (including serotype/strain content and efficacy of FMD antigens [vaccine seed-stock] stored in the vaccine bank)

<u>National Strategy for Agricultural Biosecurity</u>

- End-to-end analysis of the R&D requirements for a responsive program on high consequence diseases of livestock, with a focus on FMD. Includes identification of research and technology gaps and milestones for deployment of diagnostics, vaccines, and anti-viral therapeutics over 1-, 3, and 5-year timeframes
- Determine requirements for facilities, staffing, policies, and funding to support this joint research activity

- Coordinate the PIADC program with plans for NBACC on the Ft. Detrick National Biodefense Campus and national laboratory detection and diagnostic programs (hub-and-spoke concept)
- Identify critical inter-agency, inter-departmental, and federal-state coordination required for incident, crisis, and consequence management and communications
- Develop a joint DHS and USDA national strategy for foreign animal disease with an initial emphasis on FMD
- Joint DHS and USDA report to Congress, consistent with Sec 302(2) of the Homeland Security Act of 2002, and as required by the DHS and USDA Appropriation Committees

Conclusion

The S&T programs on foreign animal disease and food security are initially focused on two high consequence scenarios, with the goal of understanding these scenarios in sufficient detail to make a significant impact on the nation's capability to prevent, detect, respond, and recover from them.

S&T is leveraging its programmatic and research strengths, and established working relationships with key federal biodefense agencies, to complement the technology base and research capabilities available at USDA laboratories and land-grant universities.

The collaboration between S&T and USDA (APHIS, ARS) on the operation and research programs of Plum Island and NBACC will continue to be a major programmatic and operational focus in FY 2004 and beyond.

The systems studies in FY 2004 on foreign animal diseases and food security scenarios will further define the research requirements for the Portfolio's strategy and budget for FY 2005 and beyond, including the identification of critical nodes of the national food infrastructure, and the detection and surveillance requirements for selected pathogens at these nodes.

While the Directorate has made some significant early progress in the area of protecting the nation from acts of agroterrorism, challenges remain and we have a great deal of work before us. But we are confident that we are moving in the right direction with our current collaborative strategy with USDA, FDA and other stakeholders, and our plans to systematically fortify the vulnerabilities in agricultural infrastructure and protect it from threats and attacks.

Chairman Collins, Senator Lieberman, Committee Members, this concludes my prepared statement. I will be happy to take your questions now.