

Statement of

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**biological terrorism:
Department of Defense research and development**

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**SENATE COMMITTEE ON COMMERCE, SCIENCE, AND
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“Fighting Bioterrorism: Using America's Scientists and Entrepreneurs to Find Solutions”

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INTRODUCTION

Mr. Chairman and distinguished committee members, I am Dr. Anna Johnson-Winegar, Deputy Assistant to the Secretary of Defense for Chemical and Biological Defense. My office is the single focal point within the Office of the Secretary of Defense responsible for oversight, coordination, and integration of the Department's Chemical and Biological Defense Program. The tragic events of September 11th and the anthrax cases resulting from the letters sent to members of Congress and the media have heightened the public's awareness of the biological terrorism threat. I was invited to speak to the committee today about means by which to harness the potential of America's scientists and private sector to address bioterrorism. In order to address the committee's concerns, I will discuss the extensive efforts underway by the Department of Defense (DoD) to counter the biological weapons threat, including highlights of how we are leveraging the capabilities of the private sector scientific community. In addition, I will discuss some means by which the scientific community will continue to be integral to developing material responses to address the biological threat. My testimony today is in three parts:

First, I will discuss the processes by which the Department defines requirements and programs to support the current and future needs of the warfighter;

Second, I will outline current programs that address the biological threat, including how we are drawing upon the scientific community; and

Third, I will outline some current and planned efforts and processes by which the Department coordinates with the scientific community to ensure that cutting edge technologies to counter bioterrorist threats are evaluated and incorporated into the Department's research, development, and acquisition (RDA) efforts.

Department of Defense Threat, Requirements, and Programs Process

Following Desert Storm, there was a need to coordinate chemical and biological defense efforts among the Armed Services in order to better address lessons learned from the Gulf War. In 1994, the Department established the Joint Service Chemical and Biological Defense Program. The vision of this program is to ensure U.S. military personnel are the best equipped and best prepared force in the world for operating in future battlespaces that may feature chemical or biological contamination. The events of the past few months have demonstrated that our concept of future

battlespaces is changing from the battlefield to include greater emphasis on homeland security.

The customer for the DoD's Chemical and Biological Defense Program is the warfighter. The customer, through the Joint Staff and the combatant commanders, identifies requirements that form the basis of programs for the RDA community. In order to identify capabilities needed in the far term, the Services prepare a document entitled "Joint Future Operational Capabilities," which provides direction to the science and technology community.

In addition to warfighter requirements, identification of current and emerging threats by the Intelligence Community provides a principal means for the definition of program needs for biological defense. The Defense Intelligence Agency provides validated biological and chemical threat assessments. These reports assess the effects of weapons on how we fight, and in turn are used by the warfighter to generate the requirements to resolve materiel shortcomings. Together, assessments of operational needs, adversarial threats, and vulnerabilities form the basis of Mission Needs Statements and Operational Requirement Documents. The result is that our programs and technologies are driven by validated threat assessments and user mission requirements, not by technologies.

The Department of Defense has established a set of requirements for the successful completion of military operations in chemical and biological environments. We submit an Annual Report to Congress documenting our progress in meeting these requirements. The Chemical and Biological Defense Program consists of all DoD RDA efforts that develop and procure systems designed to provide U.S. Forces with the ability to operate effectively in the presence of chemical and biological agents. Joint and Service unique RDA efforts are structured to support the framework of the three mission areas of chemical and biological defense: contamination avoidance (detection, identification, warning, reporting, reconnaissance, and battle management), protection (individual, collective and medical support), and decontamination. The programs affect all Joint warfighting capabilities, while providing an integrated system of systems on the battlefield. It is essential to view all chemical and biological defense programs as an integrated system, with each mission area important to joint forces' survival. Our forces need the full spectrum of defensive equipment to survive, fight, and win in a contaminated environment. For example, protective clothing may be of little value if we don't provide the appropriate detection and warning systems.

CURRENT DOD RESEARCH, DEVELOPMENT, AND ACQUISITION TO ADDRESS BIOTERRORISM

The process I described roughly outlines how the Department conducts business during peacetime. Since September 11th, we have been at war against terrorism of global reach, and the DoD RDA community has been fully engaged in

supporting both combat operations overseas and homeland defense. I must point out to the committee that DoD is not charged with lead federal agent responsibilities as described in the Federal Response Plan for response to incidents of domestic terrorism. However, because of the Department's specialized expertise in chemical and biological defense and many unique research facilities and capabilities, the Department plays a key role in addressing bioterrorism.

DoD Biological Defense Funding Summary

In Fiscal Year 2002, the budget request for the Department of Defense Chemical and Biological Defense Program was approximately \$856 million, which includes approximately \$507 million for research and development and \$348 million for procurement. Science and technology efforts included approximately \$86 million for the Medical Biological Defense Research Program and approximately \$32 million for biological detection. Some of the remaining budget includes dual purpose projects (such as decontamination and masks) that provide protection against both chemical and biological threats. In addition, the Defense Advanced Research Projects Agency (DARPA) separately requested \$140 million for exploratory research efforts for biological warfare defense.

DoD Biological Defense Selected Project Description Summary

Following is a brief summary of key biological defense efforts.

DETECTION OF BIOLOGICAL AGENTS

The Department of Defense has fielded the following detection capabilities:

- **Biological Integrated Detection System (BIDS)** is a vehicle-mounted biological detection and identification capability. Until recently, BIDS units were deployed around the Pentagon.
- **Portal Shield** is a network sensor system that provides automated biological point detection capability to protect high value fixed sites against BW attacks. This system was deployed at the NATO 50th Anniversary, and Presidential Nomination Convention.
- **Biological Weapons Agent Sampling Kit** provides a low cost, disposable assay ticket which can provide rapid detection using environmental samples.
- **Joint Biological Point Detection System** which would provide automated point and mobile biodetection, with reduced size, weight, and power requirements compared to existing systems. The JBPDS is

currently fielded at high value military sites.

Research activities include automation of biological sample preparation, methods for detection of biological agents in water, and modeling and simulation of agents to assist in hazard warning.

MEDICAL BIOLOGICAL DEFENSE

Today, the medical treatment for individuals exposed to biological agents requires a response tailored to each specific threat. A critical capability for effective treatment includes training to diagnose and treat biological threats through such courses as “Medical Management of Biological Casualties,” which is available on the internet at www.biomedtraining.org.

Technology advances are being pursued in the research, development and manufacturing of vaccines and pharmaceuticals that prevent the lethal or incapacitating effects of biological warfare agents. Therapies that improve survival and reduce the time for recovery have been developed by private industry and tested against specific biological warfare agent threats by the DoD. These include commercially available antibiotics such as ciprofloxacin, doxycycline, and tetracycline. Rapid portable diagnostics enabling quick medical response for exposed warfighters are being pursued. Currently fielded diagnostics rely on immunological response assays. The Joint Biological Agent Identification and Diagnosis System currently under development is based on the use of polymerase chain reaction (PCR) technology to provide more rapid and accurate diagnosis. DoD has been working with the Food and Drug Administration (FDA) to obtain approval for therapies and diagnostics that are not yet FDA approved. DoD is working with FDA and the National Institutes of Health to identify candidate therapies that could be tested in animal models for select biological agents. DoD is also working with the Centers for Disease Control and Prevention and the Department of Energy National Laboratories in the development of genetic primers.

DECONTAMINATION OF BIOLOGICAL AGENTS

Decontamination supports post-attack restoration of forces and operations to a near-normal capability.

Decontamination is organized into three categories that reflect operational urgency: immediate, operational, and thorough decontamination. Decontamination also entails special considerations for patients, sensitive equipment, aircraft, fixed sites, and the retrograde of equipment. DoD doctrine addresses consequence management decontamination operations, which uses civilian standard operating procedures, including hypochlorite solutions, and soap and water solutions. Some of the existing systems include the M291 Skin Decontaminating Kit, the M295

Individual Equipment Decontaminating Kit, and the sorbent decontaminating system, which is replacing the existing decontaminant with a non-aqueous and less caustic decontaminant. Development efforts include the Joint Service Sensitive Equipment Decontamination, for items such as electronics, and the Joint Service Fixed Site Decontamination System, which will provide a family of decontaminants and applicators to provide the capability to decontaminate ports, airfield, and rear-area supply depots. Currently, military requirements support a combined decontaminant that is effective against chemical and biological agents.

Leveraging the Private Sector

The efforts described above highlight key biological defense capabilities that are fielded or are planned to be fielded in the near-term. This does not include the numerous research efforts to exploit cutting edge science and technology advances to ensure continuous improvement in our protection and response capabilities. Through the Department's science and technology efforts, the state-of-the-art in basic and applied research is being explored. An excellent example of the DoD leveraging cutting edge science and technology developed by America's scientists is the Biological Agent Warning System (BAWS) technology developed by MIT Lincoln Laboratory. The BAWS technology integrated into the JBPDS not only improved overall system performance for biological warfare agent detection, but also significantly reduced operation and support costs of the most advanced U.S. point biological detection capability.

RESEARCH AND DEVELOPMENT OPPORTUNITIES

Through the execution of the Chemical and Biological Defense Program, the private sector, academia, and other Federal government agencies are invited to apply their knowledge and skills to solve warfighter materiel needs. Executing agencies post Broad Agency Announcements, Requests for Proposals, and Requests for Quotation in accordance with the Federal Acquisition Regulation to provide a structure for fair competition of concepts and ideas. Interested parties may submit their proposals for review and award of contract. These procedures can be shortened in time of need, but remain the preferred method for the government to leverage private sector innovation.

The Chemical Biological Defense Small Business Innovative Research (SBIR) program is an effort by the Department to incorporate emerging scientific and technical capabilities of America's scientists and private sector. The overall objective of the SBIR program is to improve the transfer of innovative scientific and technical efforts that, in our case, will maximize a strong chemical and biological defense posture. Examples of innovative capabilities tapped by the

SBIR program include biological detection technology, modeling and simulation, contamination avoidance, and individual protection.

The Military Departments and Defense Agencies retain the responsibility to manage and execute the various individual projects. Frequent requests are made to review new technologies and concepts to incorporate into chemical and biological defense efforts. Solicited proposals may be submitted in response to requests for proposals (RFPs) or requests for quotations (RFQs) published in Federal Business Opportunities (known as “FedBizOpps”), the government’s designated point of entry on the Internet for providing public access to notices of procurement actions over \$25,000. FedBizOpps may be found at <http://www.fedbizopps.gov>.

The appropriate addressee for submitting unsolicited proposals is with the Military Departments and Defense Agencies. There are several organizations participating in the DoD management of chemical and biological defense programs to whom unsolicited proposals might be submitted. Many of these organizations provide information on the processes for submitting proposals through Broad Agency Announcements (BAAs) or similar instructions.

Following is a partial list of organizations, and internet addresses, with information on submitting unsolicited proposals. This information may be updated occasionally, and thus should be checked for updates.

- U.S. Army Soldier Biological and Chemical Command – <http://www.sbccom.apgea.army.mil/RDA/baa01.htm>
- U.S. Army Medical Research and Materiel Command – <http://mrmc-www.army.mil/>
- Air Force Research Laboratories – <http://extra.afrl.af.mil/bus-opps.htm>
- Naval Surface Warfare Center – <http://www.nswc.navy.mil/dahl.htm>
- Marine Corps Systems Command – <http://www.marcorsyscom.usmc.mil/BusOpps.htm>
- Joint Program Office for Biological Defense – <http://www.jpobd.net/default.htm>
- Defense Advanced Research Projects Agency – <http://www.darpa.mil>
- Technical Support Working Group – <http://www.tswg.gov>

In response to the September 11 attacks, the Department also established a BAA to accept proposals from all sources on how to respond to the terrorist threats. Thousands of proposals were submitted. Hundreds of these applied to the biological terrorist threat.

Finally, there are numerous conferences annually in which the Department’s chemical and biological defense science

and technology needs are presented to academia and industry organizations, thereby providing yet further opportunities for scientists and the private sector to become aware of how they can contribute to America's chemical and biological defense posture.

CONCLUSION

The anthrax attacks late last year pointed out the real dangers of biological weapons. While these attacks have increased the priority of our efforts, the Department has been drawing upon our nation's scientific expertise to develop and field an effective defense capability to protect our forces and nation from adversaries at home and overseas. Continuing advances in genetic engineering, biotechnology, and related scientific areas will require our continued vigilance to ensure that we are prepared for the threat and not caught by technological surprise. My comments today highlight just some of the numerous scientific efforts the Department is supporting. I thank you for the opportunity to speak today and welcome any questions you may have.