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CHEMICAL AND BIOLOGICAL DEFENSE

Observations on Actions Taken to Protect Military Forces

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GAO/T-NSIAD-00-49

Messrs. Chairmen and Members of the Subcommittees:

We are pleased to be here today to discuss the Department of Defense's (DOD) continuing efforts to protect U.S. military forces against chemical and biological weapons. Problems experienced during the Gulf War demonstrated that U.S. forces were inadequately prepared for surviving and operating in a chemically or biologically contaminated environment. We have issued reports and provided testimonies before Congress on DOD's efforts to resolve the problems identified in 1991. This statement summarizes the message in those reports and testimonies. It also describes some of our ongoing efforts to update the status of DOD's actions.

Summary

Between 1996 and 1999, GAO issued many reports and testimonies dealing with various aspects of U.S. forces' preparedness for surviving and operating on a chemically or biologically contaminated battlefield. (These reports and testimonies are listed in appendix I.) In 1996, we reported that DOD was slow in responding to lessons learned from the Gulf War. Problems encountered during this conflict demonstrated that chemical and biological defense equipment and training, and medical factors, needed more emphasis during peacetime in order to meet the demanding requirements of current U.S. strategy for the rapid deployment of forces based in the United States to regional conflicts overseas. We concluded that despite increased DOD emphasis on chemical and biological defense, problems with equipment, training, medical care, and other areas persist and are likely to result in needless casualties and a degradation of U.S. war-fighting capability. In 1997 and 1998, we issued reports and testimonies addressing more specific chemical and biological defense topics such as the protection of critical rear-area facilities, defenses against biological agents, and concerns specific to the Northeast Asian theater. These efforts reported that many doctrinal and planning aspects of chemical and biological defense remained largely unaddressed and that biological agent vaccines were insufficient to protect the force. In 1998 and 1999, our work expanded to address topics such as DOD's coordination of chemical and biological research and development programs, its strategy for low-level exposures, and implementation of DOD's anthrax vaccine program. We reported that existing chemical and biological defense program coordinating mechanisms may not ensure that program gaps and opportunities for collaboration would be addressed, and that the program had not incorporated key Results Act's principles. We also reported that DOD's anthrax vaccine program was being affected by the sole-source manufacturer's cash flow problems and the lack of studies on the safety

and human efficacy of the vaccine. Another anthrax-related product will be completed later this month addressing the issues faced by DOD regarding the regimen, production capability, record keeping, adverse reactions, and educational efforts affecting DOD's anthrax vaccine program. We are currently conducting additional reviews addressing the status of improvements in chemical and biological defense doctrine and unit and logistical readiness, the capacity of the chemical and biological defense industrial base, and the status of the Defense Counterproliferation Initiative.

Background

DOD has determined that the threat or use of nuclear, biological, or chemical weapons is a likely condition of future warfare and could occur in the early stages of war to disrupt U.S. operations and logistics. Potential adversaries, especially in the Middle East and Northeast Asia, have chemical and biological weapons stocks and the means to deliver them. These weapons are particularly attractive to adversaries seeking to counter U.S. conventional military superiority through less expensive and more attainable means. U.S. forces therefore need to be properly trained and equipped to operate in a chemically or biologically contaminated environment. When the threat of chemical and biological weapons use occurred during the Gulf War, deploying U.S. forces encountered a wide array of problems, including unsuitable and inadequate supplies of protective equipment, inadequate training in its use, unsuitable chemical and biological detectors, and an ineffective program for utilizing existing biological warfare vaccines.

1996 Assessment of Progress Since the Gulf War

Our first major report, issued in 1996 to the Readiness Subcommittee, discussed the overall capability of U.S. forces to fight and survive chemical and biological warfare, and is the centerpiece for much of the work we have performed since.[1] We reported that DOD was slow in responding to the lessons learned during the Gulf War. Although some improvements had been made, we found that

- early deploying units lacked required equipment,
- research and development progress was slower than planned,

[1] *Chemical and Biological Defense: Emphasis Remains Insufficient to Resolve Continuing Problems* (GAO/NSIAD-96-103, Mar. 29, 1996).

- Army and Marine forces remained inadequately trained for effective chemical and biological defense,
- joint exercises included little chemical or biological defense training,
- biological agent vaccine stocks and immunization plans remained inadequate, and
- Army medical units often lacked chemical and biological defense equipment and training.

We concluded that equipment, training, and medical problems persisted and were likely to result in needless casualties and a degradation of U.S. war-fighting capability. We noted that despite DOD's increased emphasis on chemical and biological defense, it continued to receive a lower level of emphasis at all levels of command than other tasks, such as performing traditional mission tasks. Many field commanders had accepted a level of chemical and biological defense unpreparedness and told us that the resources devoted to that area were appropriate, given other threats and budgetary constraints.

Progress in Defense Against Biological Agents

In April 1997 we issued a classified report to the Chairmen and Ranking Members of the House and Senate Armed Services Committees in response to a directive in the National Defense Authorization Act of Fiscal Year 1997. The report dealt with DOD's progress in implementing its policy to immunize its forces against biological threat agents, its policies and procedures regarding the use of investigational drug biological agent vaccines, and its use of investigational drugs for other prevention and treatment purposes. Our report concluded that DOD's actions at the time were not sufficient to protect the force from existing biological warfare threats.

DOD's Efforts to Protect Critical Rear-Area Facilities

In June 1997 we issued another classified report to Chairman Floyd Spence. We addressed the nature of the threat of chemical and biological warfare, the adequacy of U.S. military joint chemical and biological defense doctrine, and the preparations and plans for the chemical and biological defense of critical overseas rear-area facilities like ports and airfields. Although these facilities are critical to the ability of U.S. forces to deploy to an overseas conflict, we found that chemical and biological defense doctrine, plans, equipment, and training at these facilities were largely unaddressed. The report included findings and observations at specific critical military installations in South Korea and Southwest Asia.

Chemical and Biological Defenses in South Korea

In 1998 we issued another classified report to Congressman Duncan Hunter on the capability of the combined U.S–South Korean force to defend against North Korean artillery and chemical and biological warfare. In this report we noted a number of improvements in artillery counterfire and chemical and biological defense in South Korea and identified areas of continuing risk specific to this theater.

DOD's Strategy for Protecting Forces Against Low-Level Exposures

In September 1998 we issued a report to the Ranking Members of the Senate Committees on Appropriations, Armed Services, and Governmental Affairs on DOD's approach to addressing U.S. troop exposures to low levels of chemical warfare agents.[2] Low-level exposure is a concern because it may potentially cause or contribute to health problems that may not become evident for years after exposure. Specifically, we reported the following:

- Past research by DOD and others indicated that single and repeated low-level exposures to some chemical warfare agents could result in adverse psychological, physiological, behavioral, and performance effects that may have military implications. We also highlighted limitations of the current research.
- DOD had allocated nearly $10 million (about 1.5 percent) of its chemical and biological defense research, development, testing, and evaluation program to fund projects on low-level chemical warfare agent exposures.
- DOD did not have an integrated strategy to address exposure to low levels of chemical warfare agents.

DOD's Coordination of Research and Development Programs

Earlier this year we issued a report to the Ranking Members of the Senate Committees on Appropriations and Armed Services on the coordination of federal research and development efforts to develop nonmedical

[2] *Chemical Weapons: DOD Does Not Have a Strategy to Address Low-Level Exposures* (GAO/NSIAD-98-228, Sept. 23, 1998).

technology related to chemical and biological defense.[3] We identified four programs engaged in activities ranging from applied research to prototype development: two of these programs developed technologies primarily for military war-fighting applications and two others developed technologies primarily to assist civilians responding to terrorist incidents. We concluded that the formal and informal program coordination mechanisms may not ensure that potential overlaps, gaps, and opportunities for collaboration would be addressed. We pointed out that agency officials were aware of the deficiencies in the existing coordination mechanisms and that some had initiated additional informal contacts.

DOD's Application of the Results Act

In August of this year we reported on the extent to which DOD has applied the Government Performance and Results Act's outcome-oriented principles to its Chemical and Biological Defense Program.[4] We concluded that the program in general, and its research and development activities in particular, had not incorporated key Results Act principles, as evidenced by the fact that the goals of the program were vague and unmeasurable and did not articulate specific desired impacts. We also pointed out that the program was not being evaluated according to its impact on the defensive or operational capabilities of U.S. forces, either individually or collectively.

DOD's Anthrax Vaccine Program

As part of our work on chemical and biological defense, we have testified four times this year before the House Government Reform Committee. The first testimony dealt with the safety and efficacy of the anthrax vaccine.[5] We noted the lack of studies on long-term safety, the lack of studies on human efficacy testing against inhaled anthrax, and the limited studies of short-term reactions to the vaccine.

[3] *Chemical and Biological Defense: Coordination of Nonmedical Chemical and Biological R&D Programs* (GAO/NSIAD-99-160, Aug. 16, 1999).

[4] *Chemical and Biological Defense: Program Planning and Evaluation Should Follow Results Act Framework* (GAO/NSIAD-99-159, Aug. 16, 1999).

[5] *Medical Readiness: Safety and Efficacy of the Anthrax Vaccine* (GAO/T-NSIAD-99-148, Apr. 29, 1999).

In our second testimony, we reported on DOD's financial relationship with the sole-source manufacturer of the anthrax vaccine.[6] We observed that the company faced serious cash flow problems due to its inability to achieve an overly optimistic business plan. A recent renegotiation of the contract has mitigated some of these concerns.

In the third testimony, we reported that DOD's data on adverse reactions to the vaccinations indicated that female servicemembers reported such events in greater numbers than male servicemembers and that no clinical studies had been done to determine the optimum number of doses of the vaccine.[7] We also noted that DOD had conducted some research on a second-generation anthrax vaccine but considered such research an unfunded priority and that the Department of Health and Human Services recently funded several research grants to develop a second-generation vaccine.

Earlier this week, we testified again about the studies conducted to determine the need for a 6-injection regimen, the long- and short-term safety of the vaccine, and the vaccine's effectiveness. In addition, we addressed whether problems the Food and Drug Administration found in the vaccine production facility in Michigan might compromise the safety, efficacy, and quality of the vaccine.[8]

We are also currently working on a report to the Chairman and Ranking Member of the Senate Committee on Veterans' Affairs on some of the programmatic issues DOD faces in implementing its anthrax vaccine immunization effort. This report, which we expect to complete later this month, will cover DOD's

- ability to maintain an adequate supply of anthrax vaccine for its immunization schedule,

[6] *Contract Management: Observations on DOD's Financial Relationship With the Anthrax Vaccine Manufacturer* (GAO/T-NSIAD-99-214, June 30, 1999).

[7] *Medical Readiness: Issues Concerning the Anthrax Vaccine* (GAO/T-NSIAD-99-226, July 21, 1999).

[8] *Anthrax Vaccine: Safety and Efficacy Issues* (GAO/T-NSIAD-00-48, Oct. 12, 1999).

- system for recording and tracking servicemembers' vaccinations,
- efforts to monitor possible adverse reactions to anthrax vaccinations, and
- steps to educate servicemembers about the program.

Ongoing GAO Evaluations

We currently have several evaluations underway that will enable us to comment further on DOD's efforts to protect military forces against chemical and biological weapons.

In response to a request from the Readiness Subcommittee, we are reviewing several aspects of DOD's chemical and biological defense program. These include the status of improvements to joint doctrine and policy, the chemical and biological defense readiness of U.S. units and of critical logistics and command facilities in South Korea and the Persian Gulf (as well as units based in the United States but designated for early deployment to these areas), and the ability of medical units and logistics systems to support operations in a chemical or biological warfare environment.

In response to a request from the Chairman of the Government Reform Subcommittee on National Security and the Ranking Member of the Senate Appropriations Committee, we are examining the capacity and willingness of the chemical and biological defense industrial base to meet DOD's planned development and production requirements.

In response to a recent request from the full House Armed Services Committee, we are reviewing the status of the Defense Counterproliferation Initiative, launched by DOD in December 1993. Our work covers

- DOD's organizational structure for the initiative, including its management and oversight of the counterproliferation mission;
- the integration of the threat of nuclear, biological, and chemical weapons against U.S. and allied forces into DOD's planning, acquisition, intelligence, doctrine, training, and exercises;
- DOD's success in integrating and coordinating counterproliferation initiatives with other federal agencies, particularly with the Department of Energy and the intelligence community; and
- improvements in offensive and defensive capabilities under the counterproliferation initiative, and remaining shortfalls.

We expect to issue reports on all these evaluations sometime next year.

This concludes my formal statement. If you or other members of the subcommittees have any questions we will be pleased to answer them.

Contacts and Acknowledgments

For future contacts regarding this testimony, please contact Norman Rabkin at (202) 512-3610. Individuals making key contributions to this testimony included Raymond Decker, Joseph Murray, and William Cawood.

GAO Chemical and Biological Defense Products 1996-99

Chemical and Biological Defense: Emphasis Remains Insufficient to Resolve Continuing Problems (GAO/NSIAD-96-103, Mar. 29, 1996). Also by the same title in testimony before the House Committee on National Security, Subcommittee on Military Research and Development *(GAO/T-NSIAD-96-123, Mar. 12, 1996)* and before the Presidential Advisory Committee on Gulf War Veteran's Illnesses (*GAO/T-NSIAD-96-123, May 1, 1996).*

Chemical and Biological Defense: Observations on DOD's Plans to Protect U.S. Forces (GAO/T-NSIAD-98-83, Mar. 17, 1998).

Chemical Weapons: DOD Does Not Have a Strategy to Address Low-Level Exposures (GAO/NSIAD-98-228, Sept. 23, 1998).

Medical Readiness: Safety and Efficacy of the Anthrax Vaccine (GAO/T-NSIAD-99-148, Apr. 29, 1999).

Chemical and Biological Defense: Coordination of Nonmedical Chemical and Biological R&D Programs (GAO/NSIAD-99-160, Aug. 16, 1999).

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Anthrax Vaccine: Safety and Efficacy Issues (GAO/T-NSIAD-00-48, Oct. 12, 1999).

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