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CHEMICAL AND BIOLOGICAL DEFENSE

Observations on DOD's Risk Assessment of Defense Capabilities

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Mr. Chairman and Members of the Subcommittee:

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 attack. DOD believes it is increasingly likely that an adversary will use chemical or biological weapons against U.S. forces to degrade superior U.S. conventional warfare capabilities, placing service members' lives and effective military operations at risk. Currently, more than 20 states or non-state groups either have, or have an interest in acquiring, chemical weapons. Also, about 12 countries are believed to have biological warfare programs, and terrorist groups are known to be interested in these weapons.

Potential adversaries, especially in the Middle East and Northeast Asia, have chemical and biological weapons stocks and the means to deliver them. U.S. forces therefore need to be properly trained and equipped to operate in a chemically or biologically contaminated environment. As we have reported, 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, and unsatisfactory chemical and biological detectors.

Summary

During the past 6 years, we have identified many problems in DOD's capabilities to defend against chemical and biological weapons and sustain operations in the midst of their use. While we have found that DOD has made some improvements — in equipment, training, and reporting, and in the coordination of research and development activities — we have continuing concerns in each of these areas. One particular issue is the supply of chemical protective clothing and the way associated risk is assessed. Due to the upcoming expiration of existing protective suits, the slower rate at which new suits are entering the inventory, and DOD's method of assessing risk for individual items rather than complete protective ensembles, we believe that the risk for protective clothing shortages may increase dramatically from now through at least 2007. We also are concerned that certain management weaknesses, such as program organizational complexity and prolonged vacancies in key leadership positions, may have sent a message throughout the department about the relative priority and importance of the Chemical and Biological Defense Program.

Today, as requested, we will: (1) briefly discuss the shortcomings we identified in previous work with regard to DOD's protection of its forces against chemical and biological warfare and the steps DOD has taken to date to address them; (2) discuss the status of DOD's current and projected inventory of chemical and biological protective suits, and (3) present our observations on the management of DOD's Chemical and Biological Defense Program. We will furnish an additional statement for the closed session this afternoon.

Chemical and Biological Defense Has Improved, but Problems Persist

Since 1995, GAO has focused on the chemical and biological defense area, which has resulted in a series of reports and testimonies before Congress on DOD's efforts to prepare troops to survive and operate in a chemically and biologically contaminated environment. Major problem areas have included shortfalls in equipment, training, and reporting and weaknesses in coordinating program research and development activities. Although DOD has taken significant actions to improve the program and has increased its funding, serious problems still persist.

Shortfalls in Equipment, Training, and Reporting

Our first major report, issued in March 1996, 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 then.¹ We reported that DOD was slow in responding to the lessons learned during the Gulf War. Specifically,

- early deploying units lacked required equipment such as chemical detector paper, decontamination kits, and sufficient quantities of protective clothing;
- Army and Marine forces remained inadequately trained for effective chemical and biological defense;
- joint exercises included little chemical or biological defense training;
- Army medical units often lacked chemical and biological defense equipment and training;

¹ U.S. General Accounting Office, *Chemical and Biological Defense: Emphasis Remains Insufficient to Resolve Continuing Problems*, [GAO/NSIAD-96-103](#) (Washington, D.C.: Mar. 29, 1996).

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- biological agent vaccine stocks and immunization plans remained inadequate; and
 - research and development progress was slower than planned.

We also reported that the Joint Chiefs of Staff's Status of Resources and Training System (SORTS) — DOD's system for reporting the overall readiness of units — was of limited value in determining the readiness of units to operate in a chemically or biologically contaminated environment. The system was established to provide the current status of specific elements considered essential to readiness assessments, such as personnel and equipment on hand, equipment condition, and training. However, we found that this system allowed commanders to report their unit's overall readiness subjectively regardless of the unit's actual readiness to operate in a chemically or biologically contaminated environment.

We concluded that chemical and biological defense equipment, training, and medical problems were persisting and, if not addressed, 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 priority than traditional mission tasks at all levels of command. Many field commanders accepted a level of chemical and biological defense unpreparedness and told us that the resources devoted to that area were appropriate, given other threat concerns and budgetary constraints.

Unit Equipment Levels Have Improved, but Shortages Remain in Key Areas

When we looked again in 2000 at the readiness of early deploying U.S. forces to operate in a chemically or biologically contaminated environment, we found the situation generally improved.² Units we reviewed included three Army divisions, two Air Force fighter wings, and one Marine Corps expeditionary force. Military units are generally expected to have at least 70 percent of their equipment requirements on hand.

The units we visited had all their required individual protective equipment (such as suits, boots, and gloves) and most chemical and biological

² U.S. General Accounting Office, *Chemical and Biological Defense: Units Better Equipped, but Training and Readiness Reporting Problems Remain*, GAO-01-27 (Washington, D.C.: Nov. 14, 2000).

medical supplies and detection and decontamination equipment needed to operate in a chemically or biologically contaminated environment. In the medical arena, the Army divisions had all their needed medical supplies. The Air Force wings had most of their medical supplies, but we noted shortages of some critical items. For example, one wing had only 25 percent of the protective masks required to treat contaminated patients and only 48 percent of required patient decontamination kits. The units we visited had shortages in detection and decontamination equipment, but these shortages varied both across and within the services. For example, one Marine Corps unit and one Air Force unit had 31 percent and 50 percent, respectively, of their chemical agent monitors, whereas the other Air Force unit had 100 percent of its monitors. The three Army units we reviewed had between 88 and 103 percent of their requirements for the same item. Officials at the units with shortages of equipment said that when the units deploy, the shortages would be filled from stocks held by later deployers or from war reserves. However, the units had not determined whether this solution would meet their equipment requirements or what impact this action might have on the later deploying units' capabilities or on war reserves. The medical readiness of some units to conduct operations in a contaminated environment therefore remained questionable.

Training Deficiencies Persist

Chemical and biological defense training continues to be a problem area. We reported in 1996 that commanders were not integrating chemical and biological defense into unit exercises and that the training was not always realistic in terms of how units would operate in wartime. For example, Marine Corps commanders did not fully integrate chemical and biological defense into unit exercises, as required by Marine Corps policies, because operating in protective equipment is difficult and time consuming and this (1) decreases the number of combat essential tasks that can be performed during an exercise and (2) limits offensive combat operations. Officials stated that chemical and biological defense training is still being adversely impacted by (1) a shortage of chemical and biological defense specialists and (2) the fact that these specialists are often assigned multiple responsibilities unrelated to their specialties. For example, Army units we reviewed had from 76 to 102 percent of their authorized enlisted chemical personnel and from 75 to 88 percent of their chemical officers. The Marine Corps unit we visited had 84 percent of its authorized enlisted chemical specialists and 80 percent of its chemical officers.

Reporting Has Improved, but Changes are Incomplete

We also reported that DOD's monitoring of chemical and biological defense readiness has improved since our 1996 report. In April 2000, the Joint Chiefs of Staff directed changes to the Status of Resources and Training System that would require units to report more clearly on the quantity of chemical and biological equipment on hand and on training readiness. However, we noted the changes do not require that units report on the condition of their chemical and biological defense equipment. Thus, these reports could indicate that a unit had its chemical and biological equipment, but they would not show whether this equipment was serviceable.

Continuing Problems Confront DOD's Coordination of Research and Development Programs

We have issued a series of reports that address DOD's coordination of chemical and biological defense research and development programs. For example, in September 1998 we reported on DOD's approach to addressing U.S. troop exposures to low levels of chemical warfare agents.³ 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 that:

- DOD did not have an integrated strategy to address exposure to low levels of chemical warfare agents.
- 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.

In August 1999 we reported on the coordination of federal research and development efforts to develop nonmedical technology related to chemical and biological defense, an issue that DOD has not addressed

³ U.S. General Accounting Office, *Chemical Weapons: DOD Does Not Have a Strategy to Address Low-Level Exposures* [GAO/NSIAD-98-228](#) (Washington, D.C.: Sept. 23, 1998).

until recently.⁴ 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 highlighted that agency officials were aware of the deficiencies in the existing coordination mechanisms and that some had initiated additional informal contacts.

We are currently reviewing the effectiveness of DOD's research and testing activities in providing the scientific information needed to address doctrinal, policy, and procedural shortcomings affecting DOD's ability to operate in a chemically contaminated environment, as well as DOD's approach to ensure the survivability of mission-essential systems in the case of a chemical or biological attack. DOD's work in this area is crucial for developing the means to assure the restoration of operations in the event of chemical and biological attacks on U.S. forces at critical overseas depots, ports, and airfields.

Concerns Remain Regarding DOD's Inventory of Protective Clothing

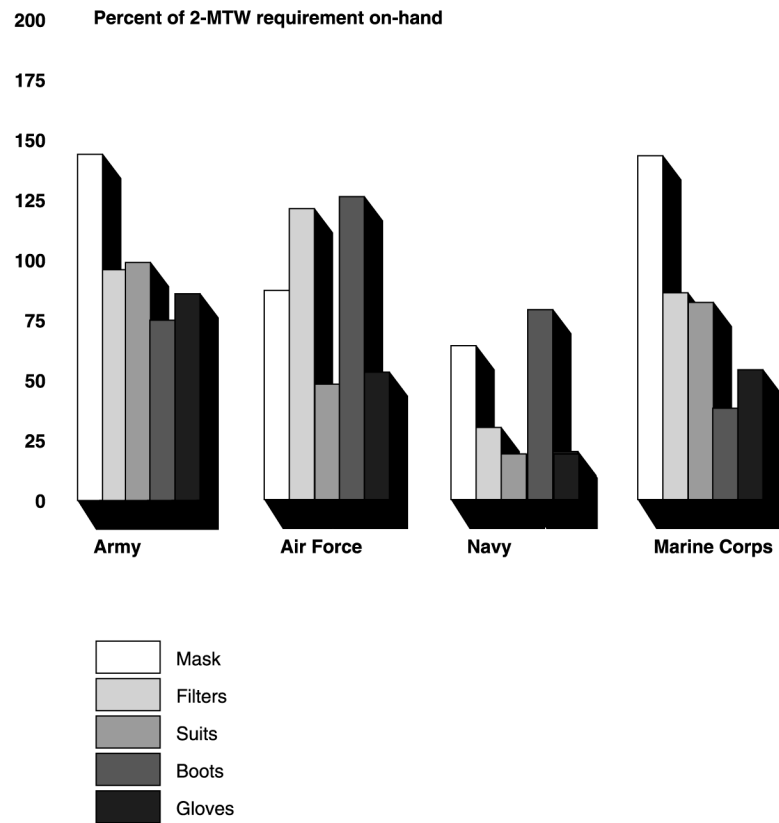
Individual protection is a critically important component of the overall chemical and biological defense program. DOD has recognized that military service members may not be able to avoid exposure to chemical and biological agents and has consequently provided U.S. forces with individual protective equipment, including clothing ensembles. We have conducted several recent reviews on this subject and are continuing to focus on DOD's acquisition and management of this equipment because of the potential for increased risks in this area. Specifically, our primary concerns involve DOD's (1) process for assessing the risk of wartime protective equipment shortages, (2) plans for addressing projected suit shortages due to the expiration by 2007 of most of the existing inventory, and (3) related inventory management and business practices. After updating equipment status and trends, we will discuss our recent reports and ongoing work in this area.

⁴ U.S. General Accounting Office, *Chemical and Biological Defense: Coordination of Nonmedical Chemical and Biological R&D Programs* GAO/NSIAD-99-160 (Washington, D.C.: Aug. 16, 1999).

Current Inventory Status and Trends

Until recently, DOD calculated its chemical and biological defense equipment needs in one of two ways: by assessing either how much would be needed to prevail in two nearly simultaneous major theater wars (often referred to as the “2-MTW” requirement), or how much would be needed to fight two MTWs as well as maintaining supplies for peacetime and training use, the “total service requirement.” In its most recent Annual Report to Congress, for example, DOD reported both inventory and these requirements for each item as of the end of fiscal year 2001. The report shows that several items, particularly in Navy stocks, qualify as “high-risk;” that is, less than 70 percent of needed equipment is on hand. Other items, such as masks, are “low-risk;” that is, the services have more than 85 percent of the needed equipment on hand. (We have been able to update some of the data, in which we generally found only modest changes from the data we show here.) Figure 1 shows these inventory levels, by service, for key components of the protective clothing ensemble.

Figure 1: Individual Protective Clothing Inventory, End of Fiscal Year 2001



Source: Chemical and Biological Defense Program Report to Congress, April 2002.

Process for Assessing Risk is Flawed

We found, though, that the raw data may understate the real risk because the method that DOD has used to calculate risk may be flawed. In September 2001, we reported that DOD’s criteria for assessing the risk of wartime shortages for protective clothing are unreliable. At that time we found that DOD had inaccurately reported the risk in most cases as “low.” We reported that the process for determining risk is fundamentally flawed because (1) DOD determines requirements by individual pieces of protective equipment — suits, masks, breathing filters, gloves, boots, and hoods — rather than by the number of complete protective ensembles that can be provided to deploying service members, and (2) the process for determining risk combines individual service requirements and reported inventory data into general categories, masking specific critical shortages that affect individual service readiness. Had DOD assessed the risk on the

basis of the number of complete ensembles it had available, by service, the risk would have risen to “high” for all of the services.

Suit Inventory May be Insufficient to Meet Requirements

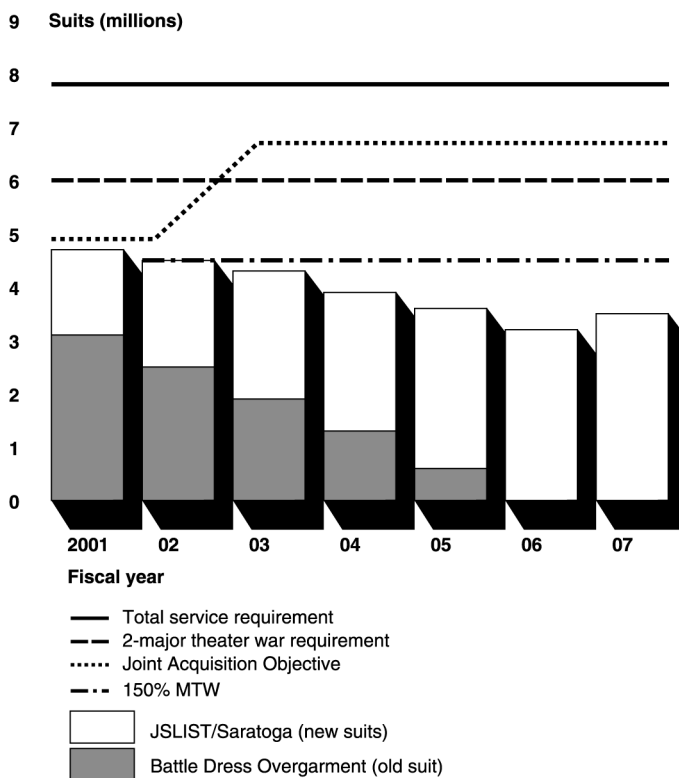
As a result of the September 2001 Quadrennial Defense Review, DOD has begun to reexamine its requirements. At present, there are several requirements levels against which inventory is measured. Official reports have commonly used the “2 Major Theater War” and the “Total Service Requirement” standards. New interim guidance indicates that DOD should be able to fully meet conflict equipment needs in one theater, while meeting only partial requirements in another. This requirement, which is expected to be finalized when DOD publishes the Illustrative Planning Scenario annex to its Defense Planning Guidance, is referred to as the “150 percent of an MTW” option.

Whatever the official requirement, the risk to U.S. forces may be increasing for two reasons. First, DOD has not yet revised its risk assessment process to consider ensemble needs and service imbalances. Second, suit shortages are projected to escalate in the next few years because (1) the majority of suits in the current inventory will reach the end of their useful life and expire by 2007, and (2) new Joint Service Lightweight Integrated Suit Technology (JSLIST) suits, along with other new generation protective ensemble components such as gloves and boots, are not entering the inventory as quickly as originally planned. Consequently, the old suits are expiring faster than they are being replaced.

We are concerned that some ensemble components, particularly suits, may not be available in adequate numbers to meet near-term minimum requirements. As of August 30, 2002, DOD had procured about 1.5 million of the new JSLIST suits, of which the majority were issued to the military services. (Others are held in Defense Logistics Agency reserves, provided to foreign governments under the Foreign Military Sales program, or allocated to domestic uses.) Together with the existing inventory of earlier-generation suits, we estimate that DOD has a total of 4.5 million suits. This level is now barely sufficient to meet the new requirement to supply 150 percent of an MTW. It is far below the Army-chaired Joint Nuclear, Biological, and Chemical Defense Board requirement, called the Joint Acquisition Objective, which combines elements of DOD and service calculations. If new suit funding and production does not increase sufficiently to replace the expiring suits, the inventory will even drop below minimal needs for the 150 percent of an MTW requirement until at

least 2007. The risk for protective clothing shortages may therefore increase dramatically during this period. Figure 2 illustrates this trend.

Figure 2. Trends in Suit Procurement and Requirements



Note: The Joint Acquisition Objective increased in 2002. This estimate assumes that none of the suits counted as available in FY 2002 has already expired or is defective.

Sources: DOD Chemical and Biological Defense Research, Development and Acquisition Plan, April 2002; Program Strategy Guidance; GAO data analysis.

Inventory Management Practices Prevent Accurate Risk Assessment

Inadequate management of inventory is an additional risk factor because readiness can be compromised by DOD's inventory management practices, which prevent an accurate accounting of availability or adequacy of DOD's protective equipment. The practices we identified regarding inventories of chemical and biological equipment contribute to the development of erroneous inventory data that in turn affect the accuracy of the risk assessment. Specifically, we reported the following:

- DOD could not monitor the status of the entire inventory of protective equipment because the services and the Defense Logistics Agency use

at least nine different systems of inventory management with differing data fields to manage suit inventories. The systems' records contain data that cannot be easily linked.

- DOD could not determine whether its older suits would adequately protect service members because some of the systems' records omit essential data on suit expiration.
- DOD could not easily identify, track, and locate defective suits because inventory records do not always include contract and lot numbers. In May 2000, DOD directed units and depots to locate 778,924 defective suits produced by a single manufacturer; as of July 2002, as many as 250,000 of these suits remained unaccounted for.
- DOD counted new suits as on hand before they had been delivered and consequently overstated the actual inventory. In response to one of our report recommendations, DOD now reports "on hand" and "due-in" suits separately in its Annual Program Report to the Congress.

DOD's Business Processes Remain Inefficient

We have also testified before this Committee as part of our work on the need for DOD to reform its business operations.⁵ We noted that inventory management procedures related to JSLIST suits, systems, and processes result in DOD, the military services, and military units not knowing how many items they have and where they are located.

DOD's business processes for procuring, controlling, and paying for JSLIST suits rely on manual data transmission and entry into nonintegrated data systems. We identified 128 processing steps performed by 11 DOD components, such as the Defense Logistics Agency, Defense Finance and Accounting Service, and the military services. Of the 128 steps, 100 steps, or 78 percent, involved manual entry or re-entry of data into one or more of the 13 nonintegrated data systems supporting the JSLIST processes. However, the complex, nonintegrated, error-prone process precludes DOD from being able to quickly and accurately identify the suits' location and condition.

⁵ U.S. General Accounting Office, *DOD Management: Examples of Inefficient and Ineffective Business Processes*, GAO-02-873T (Washington, D.C.: June 25, 2002).

Further, at the military units that GAO visited, the methods used to control and maintain visibility over JSLIST suits issued to them ranged from automated information systems, to spreadsheet applications, to paper, to dry eraser board, to none. The data maintained also varied. Some units maintained specific data, including manufacturer, manufacture date, and production lot number, while other units maintained little or no data. DOD is now taking steps to correct this problem and improve asset visibility at all levels. As recently as 2000 there was no single office that tracked all JSLIST suit production and fielding DOD-wide, for example, and the annual report to Congress was compiled by data calls to each individual service and major command within the services. Now there is such an office: the Marine Corps, in its role as commodity area manager for individual protection, can report new production of JSLIST ensemble items (suits, boots, and gloves) and the services to which they have been fielded. Our work to date has found that the Marine Corps program office has established an effective system for managing this information.

Program Review Underway

We are currently reviewing factors related to JSLIST production and the implications of the removal of the expiring suits from the inventory. Our work will (1) evaluate whether DOD's requirements and activities for acquiring and sustaining chemical protective equipment provide the military with sufficient usable chemical and biological protective clothing ensembles; (2) assess DOD's current risk assessment, testing, development, and production procedures; and (3) evaluate the effectiveness of DOD's actions to mitigate any shortfalls. We plan to report our results early next year.

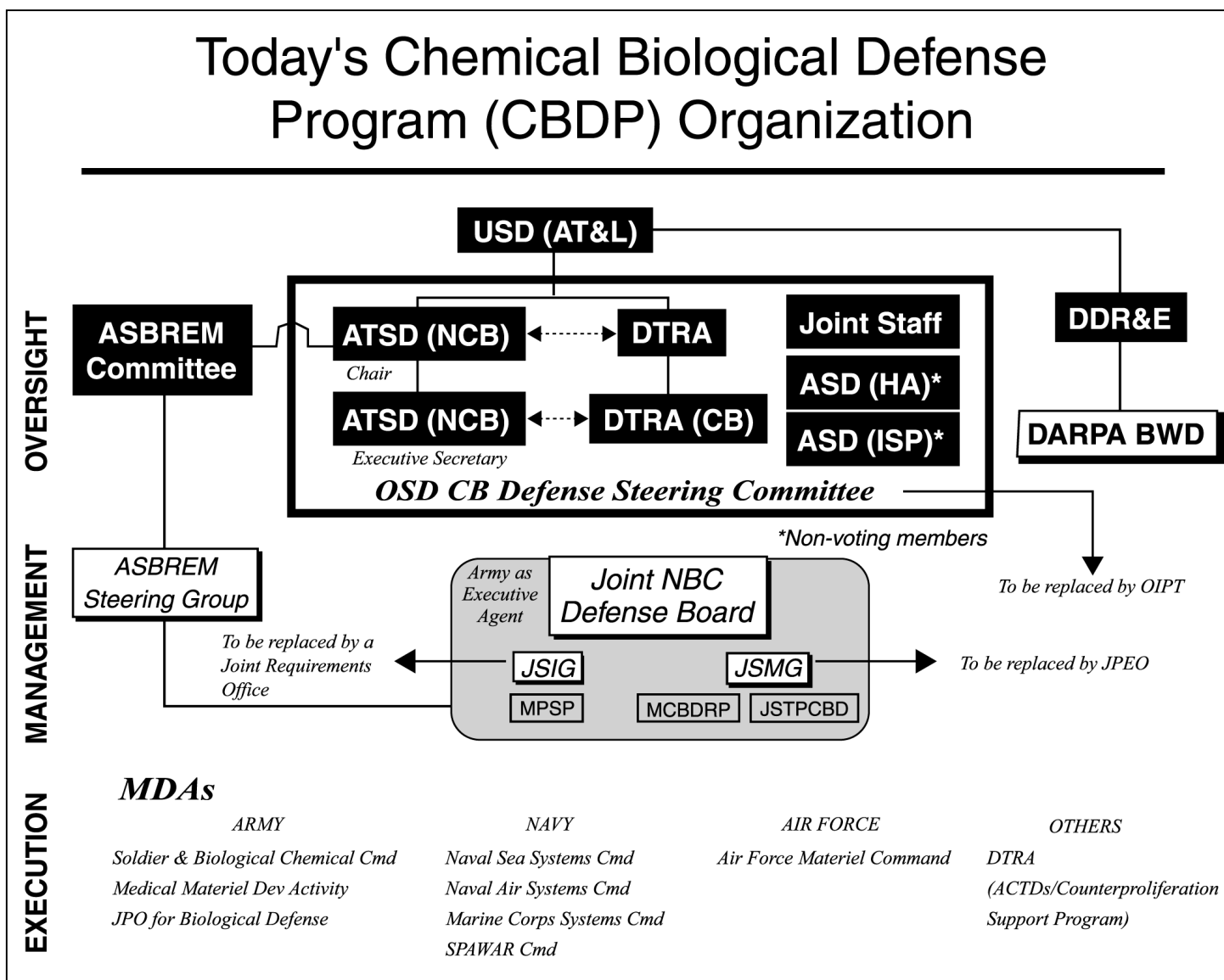
Observations on Program Management

Our body of work over 7 years highlights a serious gap between the priority given chemical and biological defense by DOD and the actual implementation of the program. Both the 1997 and 2001 Quadrennial Defense Reviews identified chemical and biological defense as key priorities of the Department of Defense. Although the program overall is clearly improved and better funded since 1995, many of the problems we previously reported still have not been resolved. We are concerned that DOD's efforts to implement this program are not consistent with the emphasis given to it in overall department guidance. Organization complexity, vacancies in key positions, and priority conflicts are all factors that have contributed to program difficulties and, if not resolved, will continue to weaken DOD's management of this program.

Program Organizational Complexity

The management of the Chemical and Biological Defense program is diffuse, with numerous offices and activities responsible for separate aspects, notwithstanding the National Defense Authorization Act for Fiscal Year 1994's (P.L. 103-160) attempt to bring oversight under one organizational authority. Concurrence on program direction is therefore sometimes difficult to achieve. This act required the Secretary of Defense to assign responsibility for overall coordination and integration of the Chemical and Biological Defense program to a single office within the Office of the Secretary of Defense (OSD), and to designate the Army as executive agent to coordinate and integrate the chemical and biological research, development, test and evaluation, and acquisition requirements of the military departments. Although this office was established shortly thereafter, many aspects of DOD's management of chemical and biological defense remain spread between this office, the military services, and other DOD organizations. Furthermore, each individual service also has numerous offices devoted to various aspects of chemical and biological defense, including planning, logistics, and acquisition. The services purchase their own consumable items such as protective suit replacements under their role of managing their own operations and maintenance funds; a process over which OSD has limited visibility. Figure 3 depicts the current organization for DOD's management of its Chemical and Biological Defense Program (CBDP), as well as some of the changes now being implemented or under consideration.

Figure 3. Current CBDP Organization and Potential Changes



Source: DOD.

The OSD office at the Assistant Secretary level that is charged with overall coordination of the Chemical and Biological Defense Program also went through upheaval during the latter part of the 1990s. The position was initially slated for elimination under the terms of the 1997 Defense Reform Initiative (DRI). As a result of the DRI, OSD oversight functions were

transferred to a different staff office within the Office of the Secretary of Defense (Director, Defense Research and Engineering), while management and most staffing of the program were transferred to a directorate within the Defense Threat Reduction Agency (DTRA). This directorate, in turn, has had five directors in less than 4 years.

Vacancies in Key OSD Positions

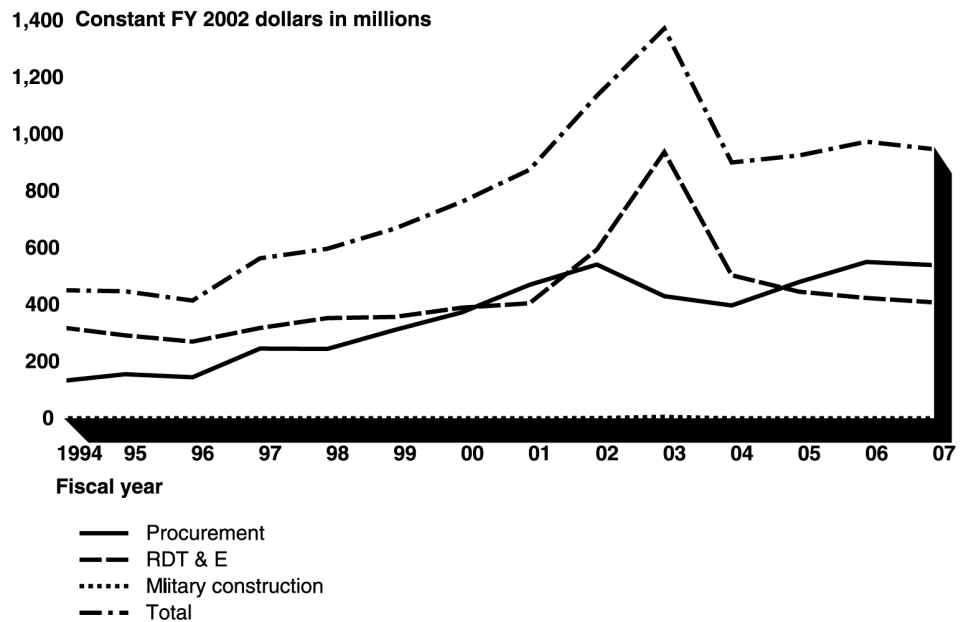
We also believe that the emphasis DOD placed on the Chemical and Biological Defense Program was adversely affected by the absence of leadership at the Assistant Secretary level for nearly 4 years. In accordance with P.L. 103-160, the Secretary designated the Assistant to the Secretary for Nuclear, Chemical, and Biological Defense (ATSD) as the principal officer responsible for oversight and coordination of the program. However, this position was vacant from 1998 through late 2001. The Deputy ATSD, who exercises day-to-day oversight over the program, was also vacant for more than a year during that period. We believe these OSD vacancies adversely affected the high-level attention received by the program as well as its ability to compete for funding against other defense needs, thereby sending a message throughout the Department about the relative priority and importance attached to the program.

Competing Priorities

DOD has requested almost \$1.4 billion for the Chemical and Biological Defense Program in fiscal year 2003 — more than three times the fiscal year 1994 amount. Nevertheless, the program has consistently had difficulty competing against other service priorities, such as those associated with traditional mission tasks. Despite the emphasis placed on this program by the Quadrennial Defense Review, spending on chemical and biological defense represents about a third of a percent of the entire \$369 billion DOD budget request.

DOD officials and field commanders alike have repeatedly stressed that they must balance chemical and biological defense requirements against all other defense needs, and do so within a constrained budget environment. For example, as we reported in 1996, officers have cited other-than-war deployments, quality of life considerations, and peacetime medical care as higher priorities than chemical and biological defense. We have previously recommended that chemical and biological defense needed direct representation by a general officer on the Joint Staff in order to receive the appropriate program emphasis and support. DOD has recently implemented this change. It remains to be seen what the effect of this change will be. Figure 4 shows the growth in Chemical and Biological Defense Program funding since fiscal year 1994.

Figure 4. Funding for Chemical and Biological Defense Program



Note: FY 2002 includes \$0.7 million for military construction and FY 2003 includes \$5.0 million for military construction. The peak in FY 2003 is caused by inclusion in the CBDP budget of \$420 million to support Office of Homeland Security biodefense projects and \$56 million for installation force protection.

Source: DOD.

There is also competition within the program between the main categories of research and development and procurement.⁶ At present, some components of the clothing ensemble, such as the JSLIST glove and next-generation mask, are in the developmental phase; others, like the JSLIST suit, are in procurement. In deciding how much money to allocate to each of the various categories and specific projects, DOD relies on the Joint Priority List, which integrates and rank-orders the preferences of combatant commanders for all chemical and biological equipment needs. On this year's Joint Priority List, for example, the JSLIST suit ranked 35 out of 72 items. Biodetection capabilities occupied the first spaces on that list. In fiscal year 2003, \$96 million is earmarked for the procurement of JSLIST suits. Conflicts over internal program priorities thus can also affect issues such as shortages of JSLIST suits.

⁶ Small sums are also spent on military construction projects.

Conclusion

DOD has made improvements over the years to defend against and sustain operations in the midst of chemical and biological weapons use. These gains have been primarily in the areas of equipment, training, and readiness reporting. During the past 6 years, DOD has concurred or partially concurred with 36 of the 37 recommendations contained in the GAO reports referred to in this testimony, and initiated or completed action on many of these. DOD recognizes that the management and organization of the program needs improvement and has recently proposed organizational and other changes designed to address many of the shortcomings we identified in prior reports. In particular, DOD recently approved the establishment of a Joint Requirements office within the Joint Staff and named a general officer as its director.

However, a real gap remains between the priority and emphasis given chemical and biological defense by DOD and the actual implementation of the program. Many needed improvements remain to be realized. Furthermore, we are concerned that without the leadership and commitment of the department to address the long term conditions we have identified, the service members of our country may be at risk in a contaminated environment. I would be pleased to respond to any questions that you have.