

GAO

Report to the Chairman, Committee on  
Armed Services, House of  
Representatives

November 2000

CHEMICAL AND  
BIOLOGICAL  
DEFENSE

Units Better Equipped,  
but Training and  
Readiness Reporting  
Problems Remain



G A O

Accountability \* Integrity \* Reliability



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# Contents

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Letter	3
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Appendixes		
	Appendix I: Individual Protective Equipment	22
	Appendix II: Medical Decontamination Supplies	23
	Appendix III: Comments From the Department of Defense	27

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**United States General Accounting Office**  
**Washington, D.C. 20548**

November 14, 2000

The Honorable Floyd D. Spence  
Chairman, Committee on Armed Services  
House of Representatives

Dear Mr. Chairman:

The Department of Defense (DOD) believes that chemical and biological weapons are likely to be used early in a conflict to disrupt U.S. operations and logistics and to potentially offset the overwhelming conventional warfare capabilities of U.S. forces. However, following the Persian Gulf War in 1990, studies confirmed that U.S. forces were not fully prepared to defend against the use of chemical or biological weapons and could have suffered significant casualties had they been used during this conflict. In 1996, we reported that early deploying Army divisions (units that would respond during the first 30 days of a conflict) continued to have many of the same problems with their chemical and biological defenses that U.S. forces experienced in the Gulf War.<sup>1</sup> Among these problems were the following:

- Many units did not have their required chemical and biological protective equipment.
- Many units were inadequately trained in basic tasks critical to surviving and operating in a chemical or biological environment.
- Military medical capabilities to prevent and treat casualties on a contaminated battlefield were very limited.

Our 1996 report also stated that the Joint Chiefs of Staff's Status of Resources and Training System (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 the training of operating forces. However, we found that commanders could subjectively upgrade their unit's overall readiness rating regardless of the unit's actual readiness to operate in a chemically or biologically contaminated environment.

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

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At the request of the late Herbert Bateman, Chairman of the Subcommittee on Military Readiness, and in response to his concerns about the readiness of early deploying U.S. forces to operate in a chemically or biologically contaminated environment, we selected three Army divisions, two Air Force fighter wings, and one Marine Corps expeditionary force,<sup>2</sup> and determined if they had (1) their required personnel protection, detection, and decontamination equipment and medical supplies<sup>3</sup> and (2) incorporated chemical and biological defense training into readiness exercises and had their authorized personnel to provide this training. We also examined DOD's actions to improve the Status of Resources and Training System's value in determining the readiness of units to operate in a chemically or biologically contaminated environment.

The units' requirements for chemical and biological equipment and medical supplies are derived from their services' guidance and regulations and computed based on various factors, such as the size of the unit, its wartime mission, and type of unit. We did not independently compute or verify the equipment and supply requirements for the forces in the units that would deploy within 30 days of a conflict, but accepted the units' requirements computations, which are reported to higher headquarters within their services.

For our review, we judgmentally selected the units based on their missions and the early deployment of their forces to a military conflict. The results of our work cannot be generalized to other units or the military services, but they provide insight into DOD's efforts to address problems with the preparedness of U.S. forces to operate in a chemically or biologically contaminated environment. This is the second in a series of reports we are preparing on the issue of chemical and biological defense.<sup>4</sup>

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<sup>2</sup>We do not identify the specific units we reviewed because that would make the report classified.

<sup>3</sup>Items needed to decontaminate chemical casualties on the battlefield prior to moving them to medical treatment facilities.

<sup>4</sup>*Chemical and Biological Defense: Critical Facility Protection Is Improved, but Major Policy Questions Remain Unresolved* (GAO/C-NSIAD-00-3, July 17, 2000).

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## Results in Brief

The units we reviewed had all their required individual protective equipment (such as suits, boots, and gloves) and most medical supplies and detection and decontamination equipment needed to operate in a chemically or biologically contaminated environment. Overall, they were better equipped for chemical or biological warfare than the units reviewed for our 1996 report. Specifically, the Army divisions had all of their medical supplies. The Air Force wings had most of their medical supplies, but they had shortages in some critical medical 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 Marine Corps did not require specific supplies for treating and decontaminating patients exposed to chemical agents. The units had shortages in detection and decontamination equipment, but those shortages varied across the services and within a service. For example, the 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 deploying units 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. We are examining the ability of depots to support equipment requirements and will present our results in a later report.

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Our current and prior work as well as the work of DOD's Office of the Inspector General found that commanders were not integrating chemical and biological defense into unit exercises and the training was not always realistic in terms of how units would operate in war. For example, we were told by Marine Corps officers responsible for chemical and biological defense training at the unit we reviewed that commanders are not fully integrating 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. We were also told that the training often lacks realism. For example, during one exercise, Marines who were simulating operations during a chemical attack were required to wear protective masks but not protective gloves because it was too cumbersome to work in the gloves. In September 1999, we reported that the Army's combat training centers were restricting the simulated use of chemical weapons against the units being trained because units were arriving at the centers with lower levels of proficiency in chemical and biological defense than in the past.<sup>5</sup> In 1998, DOD's Office of the Inspector General similarly reported that chemical and biological defense preparedness training in the services was often not fully integrated into unit exercises and, when included, was not always realistic in terms of how units would operate in war.<sup>6</sup> Officials at the units we reviewed stated that chemical and biological defense training is being adversely impacted by (1) a shortage of chemical and biological defense specialists and (2) specialists being 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. Officials at one of the units with shortages said that personnel shortages required them to use inexperienced specialists to provide training, which adversely impacted the quality of that training. The Marine Corps unit we visited had 84 percent of its authorized enlisted chemical specialists and 80 percent of its chemical officers. In addition to the personnel shortages, chemical specialists were assigned tasks unrelated to their specialties, such as coaching and training individuals at the rifle/pistol range.

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<sup>5</sup>*Military Readiness: Full Training Benefits From Army's Combat Training Centers Are Not Being Realized* (GAO/NSIAD-99-210, Sept. 17, 1999).

<sup>6</sup>*Unit Chemical and Biological Defense Readiness Training* (Report No. 98-174, July 17, 1998).



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In April 2000, the Joint Chiefs of Staff directed changes to the Status of Resources and Training System that will require units to more clearly report on the quantity of chemical and biological equipment on hand and on training readiness. However, the recent changes do not require that units report on the condition of their chemical and biological defense equipment. Thus, for example, these reports could indicate that a unit had its chemical and biological equipment, but not show that most of that equipment was unusable.

To further improve the readiness of U.S. forces and the readiness reporting system, we are recommending that the Secretary of Defense direct the Secretaries of the Army and the Air Force and the Commandant of the Marine Corps to require that units include realistic chemical and biological defense training in exercises and these exercises adhere to realistic wartime scenarios. Additionally, we recommend that the Secretary of Defense direct the Chairman of the Joint Chiefs of Staff to enhance the Status of Resources and Training System by including in chemical and biological readiness ratings the condition of chemical and biological equipment.

DOD concurred with our first recommendation and stated that it has taken actions and has on-going actions to improve chemical and biological defense training. DOD disagreed with our recommendation that the Status of Resources and Training System should show whether available equipment is usable. It stated that revising the current system further by adding additional reporting requirements for equipment condition is unnecessary and would place redundant requirements on unit commanders. We continue to believe that the system should require the separate reporting of both on-hand equipment levels and the serviceability of this equipment because during this and prior reviews, we were told of and observed equipment that was unserviceable and yet reported as being on hand for readiness reports.

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## Background

The National Defense Authorization Act for Fiscal Year 1994 directs the Secretary of Defense to provide Congress with an annual assessment of the overall readiness of U.S. forces to fight in a chemical or biological warfare environment.<sup>7</sup> DOD provides this required annual assessment in the form of

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<sup>7</sup>Pub.L. 103-160, sec. 1703, 107 Stat. 1547, 1854 (Nov. 30, 1993).

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an annual report to Congress entitled *Chemical and Biological Defense Program*. This program was established to coordinate and integrate the research, development, and acquisition of chemical and biological defense materiel and systems to support the joint war-fighting forces.

The probability of U.S. forces encountering chemical or biological weapons during worldwide conflicts remains high, according to DOD. Moreover, those countries with chemical weapons programs are adding agents and more sophisticated delivery systems. As a result, an effective defense which reduces the probability of an attack and enables U.S. forces to survive, continue operations, and win, if an attack were to occur is vital.

According to DOD's fiscal year 2000 report to Congress on its Chemical and Biological Defense Program, U.S. forces need equipment that would allow them to avoid contamination so that they can conduct successful operations under chemically or biologically contaminated battlefield conditions. However, once contaminated, they need to protect and decontaminate themselves and their equipment to sustain operations. DOD's joint doctrine for nuclear, chemical, and biological defense states that chemical and biological defense should be integrated into individual and unit training in order to develop and evaluate the readiness of U.S. forces to operate in a chemical or biological environment.<sup>8</sup> It further states that performing operations in chemical and biological protective equipment is difficult and that training is essential to countering reductions in job proficiency caused by the equipment.

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## All Required Individual Protective Equipment and Most Medical Supplies and Other Equipment Are on Hand

The units we reviewed were better equipped for chemical or biological warfare than the units reviewed for our 1996 report, possessing most of their required equipment and medical supplies. For example, all of the units had their required individual protective equipment (such as suits, boots, and gloves). Also, the Army divisions had all of their medical supplies, and the Air Force wings had shortages in only a few critical medical items. There were shortages of detection and decontamination equipment; however, those shortages were not consistent across the services or even within a service. According to officials at the units, most shortages resulted from the services' insufficient allocation of funds to purchase the items. Officials at the units with equipment shortages said that the shortages

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<sup>8</sup>Joint Doctrine for Nuclear, Biological, and Chemical Defense, Joint Pub 3-11, July 10, 1995.

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would be filled when the units deploy from stocks held by later deploying units 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. This solution for meeting shortages could pose a risk for those later deploying units or adversely impact the war reserves, which would be needed to sustain military operations under chemical and biological attacks. We are examining the ability of depots to support equipment requirements and will present our results in a later report.

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## Units Had Required Individual Protective Equipment

Individual protective equipment consists of various items, such as the individual's protective mask, gloves, and suits. According to equipment records and statements by Army officials at the units we visited, the required individual protective equipment items were on hand or had been requisitioned. We found similar conditions at the Air Force and Marine Corps units that we visited. A list of required individual protective equipment is included as appendix I. Figure 1 shows a soldier in individual protective equipment.

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**Figure 1: Soldier in Individual Protective Equipment Decontaminating a Vehicle**



Source: U.S. Army.

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In contrast, our 1996 report stated that the Army's early deploying divisions had shortages of various types of critical individual protective equipment. For example, three of the active divisions had 50 percent or greater shortages of protective clothing (battle dress overgarments) and shortages of other critical individual protective equipment items such as boots, gloves, and hoods.

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### Air Force Units Had Shortages in Medical Supplies

The Army and the Air Force required specific patient chemical decontamination items—such as aprons, gloves, sponges, and utility pails—for decontaminating casualties, whereas, the Marine Corps did not require such supplies. For the units included in our review, the Army divisions had all of their required medical supplies and the Air Force wings had most of their medical supplies. Lists of the Army and Air Force required patient decontamination items are included as appendix II.

The Air Force wings had shortages in a few items, including some categorized as critical by the Air Force. Specifically, one wing had requirements for 87 medical items and had shortages in 8 item areas, 5 critical. For example, it had only 25 percent of the protective masks required to treat contaminated patients and 48 percent of its patient decontamination kits. The masks would be used to protect the patient from further contamination after that individual has been decontaminated. The other wing had requirements for 85 medical items and had shortages in 14 item areas, 10 critical. For example, it had only 21 percent of its required protective masks.

In contrast, our 1996 report stated that medical units assigned to support the early deploying Army divisions we visited often lacked specific supplies needed to treat casualties in a chemically or biologically contaminated environment. For example, the Army medical units had on hand only about 50 to 60 percent of their authorized medical supplies.

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### Units Had Most Detection and Decontamination Equipment on Hand

The units were required to have equipment that would be used to detect and identify the presence of chemical agents and to decontaminate equipment and personnel. As table 1 shows, the shortages in detection and decontamination equipment at the units we visited were not consistent across the services or even within a service. However, the shortages were less severe for the early deploying Army and Air Force units that we reviewed than the overall servicewide shortages reported in DOD's fiscal

year 2000 report to Congress on its Chemical and Biological Defense Program.

**Table 1: On-hand Percentage of Requirements for Primary Detection and Decontamination Equipment**

Items	Marine Corps		Army			Air Force				
	Unit visited	Servicewide	Unit visited			Servicewide	Unit visited		Servicewide	
	A		A	B	C		A	B		
<b>Detection</b>										
M8A1, automatic chemical agent alarm	a	71	98	99	102	65	100	63	38	
Chemical agent monitor	31	114 <sup>b</sup>	99	103	88	35	100	50	7	
M21 remote sensing chemical agent alarm	62	87	a	a	a	127	a	a	a	
<b>Decontamination</b>										
M-17, lightweight decontamination apparatus	79	67	66	100	95	41	a	a	72	
M11, portable decontaminating apparatus	90	586	c	a	100	70	a	a	a	

Note: Individual units are referred to by letter (A, B, C).

<sup>a</sup>No requirement for the unit or service.

<sup>b</sup>Almost 60 percent of the Corps' inventory of chemical agent monitors were awaiting repair at their logistics center.

<sup>c</sup>Equipment on hand, but no requirement.

Source: GAO developed from unit reports and DOD's fiscal year 2000 report to Congress on its Chemical and Biological Defense Program.

Officials at the units we visited told us that in the event of a conflict, equipment shortages would be filled from stocks taken from later deploying units or from war reserves at equipment depots. However, they had not determined whether these sources could provide sufficient equipment to fill shortages in time to meet deployment requirements or what effect this solution might have on the detection and decontamination capability of later deploying units. Without this information, the services cannot be sure that this solution for meeting shortages would not place later deploying units at risk or adversely impact the war reserves, which would be needed to sustain military operations under chemical and biological attacks. We have work under way to review the extent to which chemical and biological defense equipment stocks (1) are adequate to meet

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requirements and (2) can be delivered from depots to deploying or deployed forces in time to effectively support operations.

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## **Chemical and Biological Defense Training Continues to Be a Problem Area**

Our current and prior work as well as the work of DOD's Office of the Inspector General found that commanders were not integrating chemical and biological defense into unit exercises and the training was not always realistic in terms of how units would operate in war. Officials at the Army and Marine Corps units we reviewed stated that chemical and biological defense training is being adversely affected by (1) a shortage of chemical and biological defense specialists and (2) specialists being assigned multiple responsibilities unrelated to their specialties.

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## **Policies Require That Chemical and Biological Defense Be Fully Integrated Into Readiness Training**

Joint doctrine provides expectations for continuing mission-essential operations in a chemical or biological environment. Joint Publication 3-11 contains overall policy guidance for operations in a chemical or biological environment. The policy prescribes that U.S. forces be prepared to conduct operations in a chemical or biological warfare environment with minimal degradation of capabilities. The publication states that chemical and biological defense training will be integrated into individual and unit training programs.

The objectives of this training are to develop and evaluate the readiness of U.S. forces to operate in a chemical or biological environment and to ensure proficiency with defensive equipment, materiel, and procedures. Each service is responsible for incorporating chemical and biological defense training into overall training plans for units and individuals. Army and Marine Corps policies require that chemical and biological defense training be fully integrated into unit exercises. Similarly, Air Force policy requires that units conduct exercises that include chemical and biological defense training at least annually.

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## **Training Not Fully Integrated and Lacks Realism**

Our current and prior work as well as the work of DOD's Inspector General found that Marine Corps, Army, and Air Force commanders were not integrating chemical and biological defense into unit exercises and the training was not always realistic in terms of how units would operate in war. For example, we were told by Marine Corps officers responsible for chemical and biological defense training at the unit we reviewed that commanders are not fully integrating chemical and biological defense into

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unit exercises, as required by Marine Corps policies. According to the officials, realistic chemical and biological defense training requires that individuals put on protective clothing and masks and perform in that equipment for extended periods, which makes it difficult and time consuming for the individuals to perform combat essential tasks. Therefore, many commanders do not integrate chemical and biological defense into training scenarios because it would (1) decrease the number of combat essential tasks that can be performed during an exercise and (2) severely limit offensive combat operations. We were also told that the training often lacks realism. For example, during one exercise, Marines, who were simulating operations during a chemical attack, were required to wear protective masks, but not protective gloves because it was too cumbersome to work in the gloves.

Air Force officials at one of the units visited stated that readiness exercises were suspended for over 3 years because of deployment requirements. They stated that the readiness exercise, conducted in February 1999, included minimal chemical and biological defense because the unit was not familiar with the chemical and biological equipment and procedures. The unit reported that during the February 1999 exercise, personnel from that unit did not consistently practice proper contamination avoidance procedures and did not have protective equipment readily available.

DOD's fiscal year 2000 report to Congress on its Chemical and Biological Defense Program stated that the Army's combat training centers continue to see units at the company, battalion, and brigade levels unable to perform all chemical and biological defense tasks to standard. The report concludes that this less than satisfactory performance is directly attributable to the lack of chemical and biological training at the units' home installations.

In September 1999, we reported that the Army's combat training centers were restricting the simulated use of chemical weapons against the units being trained because the units were not proficient in chemical and biological defense. Specifically, we reported that a ceiling was placed on the numbers, types, and times that the opposing force can use chemical weapons against units that demonstrate a low level of proficiency in chemical defense.

In 1998, DOD's Office of the Inspector General reported that chemical and biological defense preparedness training is often not fully integrated into unit exercises, and when included, is not always realistic. At 187 of 232 units it reviewed, unit commanders generally were not fully integrating

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chemical and biological defense into unit mission training. As a result, commanders could not adequately assess unit readiness to successfully complete wartime missions under chemical and biological conditions. The Inspector General recommended that the Army, Air Force, and Marine Corps revise the format of periodic training briefings to include reports by unit commanders on the readiness of their units to conduct their wartime missions under chemical and biological conditions, require the use of internal and external evaluations in assessing unit readiness for those periodic briefings, require that support units receive evaluations of chemical and biological defense readiness similar to the evaluations received by combat units, and elevate the results of external evaluations to a higher level.

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### Personnel Shortages and Inexperienced Personnel Adversely Affect Training

Officials at the units we visited cited a shortage of experienced personnel, as well as assigned personnel having multiple responsibilities, as adversely impacting chemical and biological defense training and equipment maintenance. In addition, we were told that shortages in chemical and biological specialists at the Marine Corps unit we visited could also negatively affect the unit's ability to fully perform their wartime mission.

The three services have specialists who are responsible for training combat and combat support personnel in chemical and biological defense preparedness. For the most part, these specialists are also responsible for maintaining chemical and biological equipment. In wartime, these specialists would perform various functions, including operating chemical and biological detection and decontamination equipment.

The following table shows the authorized and assigned chemical specialists at the Army, Marine Corps and Air Force units we visited.



**Table 2: Authorized and Assigned Chemical Specialists at Army, Marine Corps, and Air Force Units**

Service	Officers			Enlisted		
	Authorized	Assigned	Percent assigned	Authorized	Assigned	Percent assigned
<b>Army</b>						
Unit A	32	24	75	335	255	76
Unit B	43	38	88	300	270	90
Unit C	37	31	84	308	314	102
<b>Marine Corps</b>						
Unit A	39	31	80	228	192	84
<b>Air Force</b>						
Unit A	1	1	100	10	7	70
Unit B	1	1	100	9	6	67

Source: Service units.

At one Army unit, officials said that personnel shortages required them to use inexperienced personnel to provide training, which adversely affected the quality of that training. At another Army unit, we were told that specialists responsible for chemical and biological defense training and equipment maintenance did not have the correct qualifications and/or experience required for the job.

Marine Corps officials said that chemical and biological specialists are required to perform multiple tasks, such as preparing Status of Resources and Training System reports and coaching and training individuals at the rifle/pistol range, and that these multiple tasks diminish their ability to train other personnel on chemical and biological defense. We were also told by officials of the subordinate unit that would be responsible for decontaminating personnel and equipment in wartime that the subordinate unit only had 44 of 62 (or 71 percent) of its authorized enlisted personnel and that without its full complement of personnel, the unit's decontamination capabilities would be seriously degraded.

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## Monitoring of Chemical and Biological Defense Needs Further Improvement

DOD's monitoring of chemical and biological defense readiness has improved since our 1996 report. Since 1993, DOD has required units from all the military services to assess their equipment and training status for operations in a chemically or biologically contaminated environment and to report this data as a distinct part of the Status of Resources and Training System. However, DOD did not require that chemical and biological defense readiness be factored into the units' overall readiness assessment.

In 1996, we reported that this system's effectiveness for reporting unit chemical and biological defense readiness was limited for a variety of reasons. For example, although the reporting of critical equipment shortages was required, the determination of which equipment was critical was left up to the unit commander. As a result, data across units were inconsistent. Also, units were not required to report on some critical equipment items if they were being centrally stored as opposed to being on hand in the individual units, thus presenting an inaccurate picture of their equipment status. Our report recommended that DOD consider modifying the Status of Resources and Training System to require that chemical and biological readiness be factored into units' overall readiness assessments. However, DOD disagreed with this recommendation, stating that this reporting system provided a broad range of information on selected unit status indicators and was not intended to function as a detailed management tool. Nevertheless, DOD officials told us that unit commanders would no longer be allowed to subjectively determine what equipment is critical for reporting purposes.

In April 2000, the Joint Staff directed changes to the system that make the units' chemical and biological defense readiness data much more comparable to their overall readiness data.<sup>9</sup> For example, the new guidance requires the units to (1) report on the availability of chemical and biological defense equipment and supplies and training status and (2) assign a chemical and biological defense readiness rating to their units. The chemical and biological defense readiness rating would be in addition to the units' overall readiness rating. The guidance, however, does not require reporting on equipment serviceability or personnel on hand as is required for the unit's overall readiness rating. During this and prior reviews, we were told of and observed equipment that was unserviceable and yet

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<sup>9</sup>The changes are found in the Chairman of the Joint Chiefs of Staff Manual 3150.02, April 15, 2000.

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reported as being on hand for readiness reporting. Thus, despite the recent changes to the readiness reporting system, these reports could indicate that a unit had all its chemical and biological defense equipment, but not show that some of the equipment was unserviceable.

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## Conclusions

DOD believes that chemical and biological weapons are likely to be used in a conflict to disrupt U.S. operations and logistics and to potentially offset the overwhelming conventional warfare capabilities of U.S. forces. Chemical and biological defense equipment, supplies, and training are essential to counter this threat. Although the units we reviewed have improved in the equipment and supplies they have on hand, our current and prior work as well as the work of the DOD's Inspector General found that commanders were not integrating chemical and biological defense into unit exercises and the training that was conducted was not always realistic in terms of how units would operate in war.

The Joint Chiefs of Staff's Status of Resources and Training System is used to measure the extent individual service units possess the required resources and training to complete their wartime missions. Recent changes to the system are a step in the right direction to improving chemical and biological defense readiness reporting, but the changes do not require units to report on the condition of their chemical and biological defense equipment. Thus, these reports could provide incomplete or misleading information on the status of equipment, a key element included in assessing overall unit readiness.

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## Recommendations for Executive Action

To further improve the readiness of U.S. forces and the effectiveness of the readiness reporting system, we recommend that the Secretary of Defense direct the Secretaries of the Army and the Air Force and the Commandant of the Marine Corps to require that units include realistic chemical and biological defense training in exercises. We also recommend that these exercises adhere to realistic wartime scenarios. Finally, we recommend that the Secretary of Defense direct the Chairman of the Joint Chiefs of Staff to enhance the Status of Resources and Training System by including the condition of chemical and biological equipment in its chemical and biological readiness ratings.

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## Agency Comments and Our Evaluation

The Deputy for Chemical/Biological Defense, Office of the Assistant to the Secretary of Defense for Nuclear and Chemical and Biological Defense Programs, provided written comments on a draft of this report. DOD partially concurred on the recommendations in the draft report. Regarding our first recommendation, DOD concurred and stated that it has taken actions and has on-going actions to improve chemical and biological defense training. For example, DOD stated that the April 2000 Defense Planning Guidance directs the services and Commander in Chiefs to ensure that routine individual, unit, joint, and combined training and exercises incorporate realistic chemical and biological warfare threats. Also, to facilitate the proper training of U.S. forces to counter chemical and biological warfare threats or use, the Chairman of the Joint Chiefs of Staff will ensure that the Universal Joint Task List includes chemical and biological conditions in all applicable tasks. Moreover, combatant commanders, service component commands, combat support agencies, and services are working towards the full integration of chemical and biological defense related Joint Mission Essential Tasks into joint training.

Our draft report submitted to DOD for comments recommended that DOD further improve the Status of Resources and Training System by including the condition of chemical and biological equipment and the on-hand levels of chemical and biological personnel in its chemical and biological readiness ratings. DOD disagreed with those recommended improvements. It stated that, although the Status of Resources and Training System should be enhanced, revising the current system further by adding additional reporting requirements for chemical personnel and equipment condition is unnecessary and would place redundant requirements on unit commanders. DOD said that (1) the only chemical personnel not captured in the system are the small numbers of chemical soldiers assigned to other than chemical units, (2) because of the small numbers of personnel involved, designating chemical and biological defense personnel as a critical specialty could distort readiness reports, and (3) personnel shortages can be highlighted in commanders' comments, which are included in the Status of Resources and Training System. We agree with DOD's position on chemical personnel and have deleted reference to this part of the recommendation.

With regards to the condition of chemical and biological equipment in readiness ratings, DOD said that the majority of this equipment, primarily individual protection and unit detection equipment, is presently reported as either fully serviceable or not reported at all. It stated that the serviceability

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of unit-level power-driven decontamination systems is presently not reported but that the services are being encouraged to incorporate the serviceability of these systems into readiness ratings and that they are currently performing analyses to determine the feasibility of doing this.

We continue to believe that the new chemical and biological reporting requirement in the Status of Resources and Training System should require the separate reporting of both on-hand equipment levels and the serviceability of this equipment. We acknowledge that this distinction may not be as important for some types of individual protective equipment as mentioned in DOD's comments above. However, much of a military unit's capability to perform essential chemical and biological defense functions—such as the detection of chemical and biological agents and the decontamination of major items of equipment—is dependent on unit as opposed to individual equipment. As stated previously, during this and prior reviews, we were told of and observed equipment that was unserviceable and yet reported as being on hand for readiness reports. For example, in a recent review of deployed forces, we found that a large unit overseas was reporting that it had all of its power-driven decontamination systems on hand and was consistently reporting a high degree of unit readiness. However, unit personnel could not locate over half of the systems and only one system that they located was known to have a usable water storage bladder, which is critical to the system's effectiveness. Moreover, it took unit personnel several attempts over 2 hours and partial disassembly and cleaning of this system's motor before the system could be operated. In ongoing work, we continue to find problems with equipment serviceability, including individual protective equipment, in some units reporting high levels of readiness in the chemical and biological portion of their Status of Resources and Training System report. Furthermore, the April 2000 changes to the Status of Resources and Training System now require the units to report on the availability of chemical and biological equipment and supplies and training status and to assign a chemical and biological defense readiness rating to their units. The system previously required and still requires that units report on these elements as well as equipment serviceability for overall readiness reporting. Therefore, we do not believe the reporting on equipment serviceability would be redundant but rather it would improve the visibility of the real status of chemical and biological equipment.

DOD also provided some technical comments, which we incorporated into the report, where appropriate. DOD's overall comments are included in appendix III.

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## Scope and Methodology

To determine whether U.S. forces were adequately equipped, staffed, and trained, we compared service- and command-level requirements for chemical and biological defense to the equipment and personnel reported to be on hand and to the training that had been conducted at selected units of the Army, Marine Corps, and Air Force. We discussed with key command and unit officials the significance of any reported shortages of equipment or personnel. We also discussed with officials whether equipment reported as on hand was in working condition. During our observation of storage locations, we randomly selected some items of equipment and asked unit officials to operate them for us. We reviewed training reports and held discussions with officials on the extent to which chemical and biological factors were included in the major training exercises. The units visited were one Marine Corps expeditionary force, two Air Force fighter wings, and three Army divisions. We also interviewed officials and obtained documents from the Office of the Secretary of Defense; the Joint Chiefs of Staff; the headquarters of the Army, Marine Corps, and Air Force; U.S. Joint Forces Command; Army Forces Command; and the Air Force Air Combat Command.

To determine what actions had been taken to improve chemical and biological defense readiness reporting, we reviewed recent revisions to the guidance for preparing Status of Resources and Training System reports and discussed these changes with officials from the staff of the Joint Chiefs of Staff. We also compared these revisions to our prior recommendations and to the conditions that we found at the units visited to determine if the revisions would adequately surface readiness problems.

Our review was conducted from February through September 2000 in accordance with generally accepted government auditing standards.

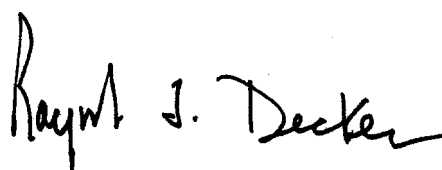
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We are providing copies of this report to the Honorable William S. Cohen, Secretary of Defense; the Honorable Louis Caldera, Secretary of the Army; the Honorable F. Whitten Peters, Secretary of the Air Force; General James Jones, Commandant of the Marine Corps; and interested congressional committees. Copies of this report will also be made available to others upon request.

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Please contact me at (202) 512-6020 if you or your staff have any questions concerning this report. Key contributors to this report were Robert Pelletier, Connie Sawyer, Linda Koetter, and William Cawood.

Sincerely yours,

A handwritten signature in black ink that reads "Raymond J. Decker". The signature is written in a cursive style with a large initial 'R' and a distinct 'J'.

Raymond Decker  
Director, Defense Capabilities  
and Management

# Individual Protective Equipment

Equipment	Description
M256 chemical agent detector kit	Kit is used to detect and identify concentrations of nerve agents (e.g., sarin, tabun), blister agents (e.g., mustard, phosgene oxime), and blood agents (e.g., hydrogen cyanide and cyanogen chloride) in vapor form in about 15-20 minutes.
M9 detector paper M8 detector paper	Dye impregnated papers that change color when exposed to liquid chemical agents or aerosols.
M291 skin decontamination kit	Kit consists of fiber applicator pads which enable individual to remove, neutralize, and destroy chemical warfare agents on contaminated skin.
M295 equipment decontamination kit	Kit consists of individual mitts which enable the individual to remove, neutralize, or destroy chemical agents and toxins on personal items and equipment.
C2/C2A1 filters	The filters are used with the protective mask and provide the ingredients that absorb chemical agent particles as small as .3 microns in size.
Protective mask	Masks that provide face and respiratory protection from chemical and biological agents, toxins, and radioactive fallout particles.
Chemical protective helmet covers and hoods	These items fit over the helmet to protect the individual against chemical and biological agents.
Battlefield protective suit	A garment that is typically worn over the duty uniform to protect the individual against chemical agent vapors and liquid droplets, biological agents, and radioactive particles.
Chemical protective gloves	Rubber outer gloves for protection from chemical agents and a cotton inner glove for perspiration absorption.
Chemical protective overshoes	Overshoes that are worn over the combat boots to provide chemical agent and/or moisture protection.



# Medical Decontamination Supplies

The Army maintains its medical decontamination supplies in kits. The three units we visited were required to have 12, 32, and 46 kits comprised of the items in table 3.

**Table 3: Required Medical Decontamination Supplies for Army Units**

Description	Authorized
Scissors bandage	16
Hypodermic syringe	1
Folding litter support	8
Folding litter	2
No. 4 chest	3
No. 6 chest	1
M8 chemical agent paper	6
M9 chemical agent paper	1
Calcium hydrochlorite	49
Decontaminating kit	2
Utility pail	10
Black pencil	2
Cellulose sponge	10
Plastic bag	2
Roll, plastic sheet	1
Apron, toxic agent protect, small	2
Apron, toxic agent protect, medium	4
Apron, toxic agent protect, large	2
Chemical protective glove set, small	2
Chemical protective glove set, medium	4
Chemical protective glove set, large	2
Chemical gloves insert, small	25
Chemical gloves insert, medium	25

Source: Army units.

Table 4 provides a list of medical decontamination supplies that are required by the Air Force units we visited and the on-hand amounts and percent.

**Appendix II  
Medical Decontamination Supplies**

**Table 4: Required Medical Decontamination Supplies for Air Force Units**

Description	Critical	Required	Unit A		Unit B	
			On hand	Percent on hand	On hand	Percent on hand
Aircraft cargo pallet	X	1	1	100	1	100
Top cargo net tie down	X	1	1	100	1	100
Side cargo net tie down	X	2	2	100	2	100
Insecticide sprayer		2	2	100	2	100
Air conditioner, 50/60 HZ		2	2	100	2	100
Decontaminating kit		100	100	100	48	48
Chemical/biological mask, hood	X	160	160	100	268	167
Chemical/biological mask, small	X	7	6	86	6	86
Chemical/biological mask, medium	X	38	3	8	0	0
Chemical/biological mask, large	X	7	2	29	7	100
Chemical/biological mask, canister	X	160	117	73	160	100
Manual inflating pump	X	1	1	100	1	100
Centrifugal pump unit		1	1	100	1	100
Dry chemical water purifier	X	2	2	100	2	100
Rubber water hose, 50 feet	X	16	16	100	16	100
Garden hose nozzle	X	4	4	100	4	100
Crash steel blade knife	X	10	10	100	10	100
Safety rescue knife	X	20	20	100	20	100
Shovel		4	4	100	4	100
Collapsible fabric tank	X	2	3	150	1	50
Standard distribution box	X	2	2	100	2	100
Distribution box	X	2	2	100	2	100
Convenience outlet accessory	X	3	0	0	3	100
Nonrechargeable battery		9	9	100	9	100
Electric power cable assembly 100 feet	X	3	3	100	3	100
Right angle flashlight		40	40	100	40	100
Fluorescent light set	X	5	5	100	5	100
Povidone-Iodine cleaner, 1 gallon		6	6	100	10	167
Gauze surgical sponge	X	24	24	100	35	146
Surgical sponge, 12 ply	X	24	24	100	220	92
Tongue depressor		5	5	100	5	100
Scissors bandage	X	80	76	95	80	100
Hand operated resuscitator	X	2	2	100	2	100

**Appendix II  
Medical Decontamination Supplies**

Description	Critical	Required	Unit A		Unit B	
			On hand	Percent on hand	On hand	Percent on hand
Wheeled litter carrier	X	14	14	100	14	100
Aluminum litter, polegreen	X	12	14	117	15	125
Chemical agent detector paper	X	50	50	100	50	100
Chemical detector kit	X	10	10	100	10	100
Chemical agent monitor	X	6	6	100	2	33
Chemical agent paper	X	20	20	100	20	100
Simulator detector ticket	X	3	3	100	3	100
ADM 300A multifunction survey meter	X	3	3	100	3	100
Radiac verification kit	X	1	1	100	1	100
Calcium hypochlorite tech		5	5	100	0	0
Skin decontaminating kit	X	2	2	100	2	100
Individual decontaminating kit		4	2	50	4	100
Folding steel chair	X	12	12	100	12	100
Food storage shelving		2	0	0	2	100
Utility pail	X	20	12	60	35	175
Waste receptacle, 32 gallon		15	9	60	15	100
Steel dustpan, 7 inches long		2	2	100	2	100
Plastic coat hanger		40	0	0	41	102
Pressure sensitive adhesive tape	X	20	20	100	20	100
Bench dusting brush 13 inches		6	6	100	6	100
Upright broom		2	2	100	4	200
Plastic bag		1	1	100	1	100
Plastic bag, 60 X 36 200S	X	1	1	100	1	100
Ship and storage container	X	2	3	150	2	100
Pin tent wood 24 inches long	X	60	60	100	60	100
Pin tent 0.625 X 12 inches	X	60	60	100	60	100
Single ply floor tent	X	4	4	100	7	175
Tent pin container	X	3	3	100	3	100
Fly, tent	X	4	4	100	4	100
Fly, tent section TAN	X	5	5	100	5	100
Tent door	X	2	2	100	2	100
Tent window	X	8	8	100	13	162
Frame section, tent	X	10	10	100	10	100
Apron toxic agent, protect M-2	X	20	20	100	20	100
Apron toxic agent, protect M-2	X	20	20	100	20	100

**Appendix II  
Medical Decontamination Supplies**

Description	Critical	Required	Unit A		Unit B	
			On hand	Percent on hand	On hand	Percent on hand
Chemical protective suit, small	X	5	4	80	5	100
Chemical protective suit, medium	X	80	25	31	80	100
Chemical protective suit, large	X	80	27	34	80	100
Glove insert large	X	160	160	100	161	101
Black rubber chemical gloves, small	X	10	10	100	10	100
Black rubber chemical gloves, medium	X	160	160	100	160	100
Black rubber chemical gloves, large	X	10	10	100	10	100
Overshoes chemical, mens 8	X	20	20	100	20	100
Overshoes chemical, mens 9	X	50	50	100	50	100
Overshoes chemical, mens 10	X	50	50	100	50	100
Overshoes chemical, mens 11	X	30	30	100	30	100
Overshoes chemical, mens 12	X	10	10	100	10	100
Overshoes chemical, mens 13	X	20	21	105	20	100
Overshoes chemical, mens 14	X	20	20	100	20	100
Trunk locker plywood		2	2	100	2	100
Diatomaceous earth 50 pound		3	3	100	3	100
Contamination sign kit		2	2	100	2	100
Battery charger analyzer		1	<sup>a</sup>		0	0
Chemical protective suit, x-large		5	<sup>a</sup>		5	100

<sup>a</sup>No requirement for the unit.

Source: Air Force units

# Comments From the Department of Defense



NUCLEAR AND CHEMICAL  
AND BIOLOGICAL DEFENSE  
PROGRAMS

ASSISTANT TO THE SECRETARY OF DEFENSE  
3050 DEFENSE PENTAGON  
WASHINGTON, DC 20301-3050

OCT 19 2000

Mr. Norman J. Rabkin  
Director, National Security Preparedness Issues  
National Security and International Affairs Division  
U.S. General Accounting Office  
Washington, D.C. 20548

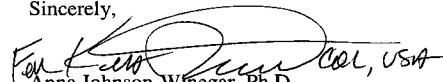
Dear Mr. Rabkin,

This is the Department of Defense (DoD) response to the General Accounting Office (GAO) draft report, "CHEMICAL AND BIOLOGICAL DEFENSE: Units Better Equipped, but Training and Readiness Reporting Problems Remain," dated September 2000 (GAO Code 702038/OSD Case 2087).

The DoD partially concurs with comment on the recommendations in the draft report. Regarding the first recommendation, we believe the Defense Planning Guidance Update for FY 2002 - 2007, which provides explicit direction on CB defense doctrine development, exercises, and training in the section "Responding to Asymmetric and Transnational Threats", addresses this concern. Appropriate extracts of the DPG are included in our detailed comments, which are attached. Under the second recommendation, DoD recognizes that the status of the Global Status of Resources and Training System (GSORTS) should be enhanced. However, GSORTS is not intended to function as a detailed management tool to report on all conceivable variables, or function as a chemical/biological defense inventory or personnel management tool. Revising the current system further by adding additional reporting requirements is unnecessary and would place redundant requirements on unit commanders.

The Department appreciates the opportunity to comment on the draft report.

Sincerely,

  
Anna Johnson-Whegar, Ph.D.  
Deputy for Chemical/Biological Defense

Enclosure:  
DoD Comments on the GAO Recommendations

**Appendix III**  
**Comments From the Department of Defense**

GENERAL ACCOUNTING OFFICE DRAFT REPORT DATED SEPTEMBER 2000 (GAO CODE 702038/ OSD CASE 2087)

"CHEMICAL AND BIOLOGICAL DEFENSE: UNITS BETTER EQUIPPED, BUT TRAINING AND READINESS REPORTING PROBLEMS REMAIN"

DOD COMMENTS ON THE GAO RECOMMENDATIONS

RECOMMENDATION 1: To further improve the readiness of U.S. forces and the effectiveness of the readiness reporting systems, the GAO recommended that the Secretary of Defense direct the Secretaries of the Army and the Air Force and the Commandant of the Marine Corps require that units include realistic chemical and biological defense training in exercises and that the exercises adhere to realistic wartime scenarios.

DoD Response: Concur with Comment. The April 2000 Defense Planning Guidance provides the following directions to the Services and Commander in Chiefs (CINCs):

- **Doctrine Development.** The Department will develop or adapt operational concepts and joint doctrine to mitigate the degradation of planned operating tempos in a CB warfare (CBW) environment. The Joint Staff and CINCs will continue to develop a counter-CBW operational concept that integrates counterforce, active and passive defense, and consequence management measures for ground, air, and sea operations, including logistics. This concept will serve as the basis for refining doctrine to reflect all aspects of counter-CBW operations. In particular, the joint counter-CBW operational concept will take into account the different Service requirements for CBW defense (i.e., for key sites, headquarters, seaports, and air bases). Based on this overarching counter-CBW concept, the Chairman, Joint Chiefs of Staff (CJCS) will ensure that joint doctrine, especially for critical functions that would be particularly vulnerable to CBW attack (e.g., logistics), fully addresses the threat posed by CB weapons and their means of delivery.
- **Exercises and training.** As part of major joint exercises, the CINCs will routinely include training to assess and enhance preparations for sustained operations in CBW environments. To enhance the ability of forces to carry out their missions despite the presence, threat, or use of CBW weapons, the Services and CINCs will ensure that routine individual, unit, joint, and combined training and exercises incorporate realistic CBW threats. To facilitate the proper training of U.S. forces to counter CBW threats or use, the CJCS will ensure that the Universal Joint Task List (UJTL) includes CBW conditions in all applicable tasks. Major weapon systems required to operate in CBW environments will be operationally tested and evaluated to determine whether the systems are effective and suitable despite the presence, threat, or use of CBW by an adversary.

In the past year, the Department of Defense has undertaken a number of initiatives to improve chemical and biological (CB) defense readiness and readiness reporting. At the 30 November 1999 Counterproliferation (CP) Council meeting, representatives from the Office of the Secretary of Defense (OSD) and the Joint Staff briefed policy and programmatic initiatives to improve CB defense readiness. The key outcome was that Deputy Secretary Hamre approved a study, co-chaired by OSD and the Joint Staff, to evaluate and suggest

Enclosure

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**Appendix III**  
**Comments From the Department of Defense**

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improvements in CB defense standards and readiness reporting. The CB Defense Operational Standards and Reporting Study Group's findings and recommendations were briefed at the 16 June 2000 CP Council meeting, chaired by Deputy Secretary de Leon.

As a result of that meeting, Secretary Cohen directed a number of actions to improve the preparedness of U.S. forces to operate in CB environments, in his 17 Aug 2000 memorandum, subject: Chemical and Biological (CB) Defense Readiness (U). As directed, OSD, the Joint Staff and the Defense Threat Reduction Agency (DTRA) co-hosted a Joint CB Defense Concepts of Operations (CONOPS) Workshop for CINC and Service representatives on 7 – 8 September 2000. The purpose of the workshop was to begin the process of identifying existing CONOPS for sustaining military operations in a CB environment; recommending needed revisions to current doctrine, CONOPS, and tactics, techniques and procedures (TTPs); and proposing a work program and Service leads for executing that program.

The CBD Operational Standards and Reporting Study Group also identified a lack of specific, quantitative standards for conducting mission essential tasks under chemical or biological conditions. The Joint Mission Essential Task List (JMETL) development process is the mechanism used to develop such standards. Study conclusions prompted the CP Council to find that concerted action is required to embed CBD-related standards in war fighting mission essential tasks.

The Joint Staff Director for Operational Plans and Interoperability (J-7) therefore has developed a plan to promote the embedding of CBD-related tasks into CINC's mission essential tasks. To advance CINC development of threat-specific and area of responsibility-specific CB defense related tasks, J-7 will take steps to encourage combatant commanders, Service component commands, Combat Support Agencies (CSAs), and Services to identify needed CB defense related changes to the Universal Joint Task List (UJTL), Version 4.0, which is currently undergoing revision. Supported combatant commanders are to develop CB defense related JMETLs according to timelines in the Joint Training Master Plan 2002. The most important outcome of this plan will be the full integration of CB defense related JMETLs into Joint Training.

Additionally, a DTRA sponsored Restoration of Operations Advanced Concept Technology Demonstration will measure, identify, and recommend CONOPS, TTPs, and technologies that will help sustain operations at fixed sites before, during, and after a chemical or biological attack. These can be the foundation for large-scale exercises, and the data will be useful to better identify essential information for reporting readiness and evaluating training against true operational requirements and needed capabilities.

These are substantial examples of the on-going actions that the Department has undertaken to improve chemical and biological defense readiness and training.

RECOMMENDATION 2: The GAO recommended that the Secretary of Defense direct the Chairman of the Joint Chiefs of Staff to enhance the status of Global Status of Resources and Training System (GSORTS) by including the condition of chemical and biological equipment and the on-hand levels of chemical and biological personnel in its chemical and biological readiness ratings.

Enclosure

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**Appendix III**  
**Comments From the Department of Defense**

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DoD Response: Partial Concur. The Department has previously noted that GSORTS is not intended to function as a detailed management tool to report on all conceivable variables, or function as a CB defense inventory or personnel management tool. GSORTS currently addresses personnel readiness for all chemical defense units. The only chemical personnel readiness not captured in GSORTS are the small numbers of chemical soldiers assigned to other than chemical units. In three of the four Services a majority of the chemical defense duties are assigned as additional duties. The Army and the Marines are the only Service with a chemical Military Occupational Specialty (MOS) that trains soldiers performing these duties. The Army and the USMC assign, monitor, and track the location of each of these soldiers through its functional area managers and personnel system. The Army can designate CBD personnel as a critical specialty, then the on-hand levels are captured in the Critical Specialty and Critical Grade Fill Levels, which are then used to calculate the Total Personnel Level (P-Level). Giving a low density MOS its own personnel rating could result in inaccurate (under valued) readiness reports. For example, a shortage of 1 or 2 soldiers in these units would result in a P rating of 3, driving the units overall readiness to a C rating of 3. Currently the commander can highlight this shortage in his commander's comments field, which is viewable in GSORTS. Revising the current system further by adding additional reporting requirements is unnecessary and would place redundant requirements on unit commanders.

The deadline for the implementation of the Chemical/Biological Defense Reporting and Training (CBDRT) reports in GSORTS was April 2000. This was a requirement in the Chairman, Joint Chiefs of Staff Manual (CJCSM) 3150.02 that became effective in April. Currently the Army is the only one reporting. The other services are delayed due to required software changes to their readiness systems. All should be reporting by January 2001.

GSORTS also addresses on-hand quantities and serviceability of required CB defense equipment. The majority of this equipment, primarily individual CB protective and unit detection equipment, reported in GSORTS is either fully serviceable or not reported at all. Equipment determined unserviceable is turned in and not reflected in the on-hand quantities based on the established requirement. The NBC Reconnaissance System, biological detection systems and heavy decontamination systems are considered combat essential to chemical defense units and serviceability is reflected in GSORTS. The only items of CB defense equipment that do not have serviceability reflected in GSORTS are primarily unit level operational power driven decontamination systems which are maintained at the unit level. Individual services may upgrade the status of these systems to combat essential to reflect serviceability status in GSORTS. The Services are encouraged to upgrade the status of these systems and are currently performing analyses to determine its feasibility.

Finally, as a continuation of the CB Defense Operational Standards and Reporting Study, a working group is examining how to improve the inter-Service CBD reporting consistency, especially in the area of equipment, training, and sustainment stocks.

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**Appendix III**  
**Comments From the Department of Defense**

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