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CHEMICAL WEAPONS DESTRUCTION

Issues Related to Environmental Permitting and Testing Experience

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Mr. Chairman and Members of the Subcommittee:

I appreciate the opportunity to testify on the Department of Defense's (DOD) Chemical Stockpile Disposal Program. My remarks today will be directed toward DOD's efforts to obtain environmental permits for its reverse assembly high-temperature chemical weapons incinerators, the status of its prototype facility on Johnston Island in the Pacific Ocean, and events that will likely affect the program's costs and schedule.[1] DOD plans to spend almost $8 billion to construct and operate these chemical incinerators at chemical weapons and agent storage facilities on Johnston Island and at eight stateside locations.[2] These incinerators cannot be constructed until environmental permits are obtained from federal and state regulatory agencies.

On the basis of our work to date, we have identified four issues that could impede the timely completion of the disposal program and contribute to additional cost growth.

-- First, the Army, as DOD's lead service in chemical matters, relied on temporary and special authorizations in complying with environmental regulations for its Johnston Island and Anniston facilities in order to expedite destruction of chemical weapon stockpiles. In obtaining the authorizations, the Army was able to proceed with its program without public review or comment. In the future, regulators may not be as cooperative.

-- Second, restrictive legislation that has been enacted in two states and considered in two others could delay or prevent construction and operation of chemical agent incinerators and seriously jeopardize the Army's plan to meet its scheduled program completion date. However, the Army has yet to develop either a strategy for dealing with these laws or a contingency plan in the event that a state denies the Army an environmental permit altogether.

-- Third, the Army's fiscal year 1993 funding request for incinerator construction and equipment at the Anniston and Lexington sites is based on unrealistic permit approval schedules and therefore could be deferred.

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[1]The high-temperature incineration process involves a disassembly procedure that breaks down munitions into their component parts. Once disassembled, the agent and the chemical munition components are burned separately in four furnaces.

[2]The continental U.S. locations are Tooele, Utah; Anniston, Alabama; Umatilla, Oregon; Pine Bluff, Arkansas; Pueblo, Colorado; Lexington, Kentucky; Newport, Indiana; and Aberdeen, Maryland.

-- Finally, mechanical difficulties are also threatening to delay program completion and will probably contribute to future cost growth. Thus far, the Army has been unable to sustain expected munition destruction rates at its Johnston Island facility. The plant has experienced numerous unscheduled shutdowns for maintenance.

BACKGROUND

In 1985, Congress enacted Public Law 99-145, requiring DOD to destroy all but 10 percent of the U.S. stockpile of chemical weapons and agents by September 30, 1994. The law specified that the disposal program should provide for the maximum protection of the environment and the general public. The Secretary of Defense established a program management office within the Department of the Army to be responsible for the Chemical Stockpile Disposal Program. At the request of the Army, Congress subsequently extended the program completion date, first to April 30, 1997, and most recently to July 31, 1999. In April 1992, the Army informed Congress that the completion date would need to be extended to December 2000.

The chemical agents that the Army plans to destroy include the nerve agents GB and VX and H series blister agents commonly called mustard. GB and VX disrupt the nervous system and lead to loss of muscular control and usually death. Mustard blisters the skin and can be lethal in large amounts. The agents are loaded into various munitions, including rockets, bombs, mines, and projectiles. Bulk agents are stored in one-ton containers and spray tanks. Currently the items are stored at eight locations in the continental United States and on Johnston Island. The types and quantity of stored munitions are different for each site. Some storage sites are located next to densely populated areas.

In 1985, funds were allocated to build the first chemical weapons disposal facility on Johnston Island. Construction of the facility started that same year, equipment was installed in 1987, and the first chemical munitions were processed through the facility in June 1990.

To determine the safest option for incinerating chemical weapons within the continental United States, the Army analyzed the risks associated with the disposal of the stockpile on-site at existing storage locations, at two regional locations, and at one national site.[3] In addition, because of public comments, the Army considered relocation of the stockpile from two sites surrounded by densely populated areas, and on-site disposal at the other six

[3]The Army also assessed the risks of continued storage. However, this was not considered a viable option given the requirement to destroy the stockpile mandated in Public Law 99-145.

sites. In 1988, citing difficulties ensuring the health and safety of persons living close to proposed transportation routes, the Army announced that it planned to build and operate incinerators at the eight chemical weapons storage sites.

The Resource Conservation and Recovery Act, as amended, gives the Environmental Protection Agency (EPA) and applicable state agencies authority to regulate the construction and operation of high-temperature hazardous waste incinerators. These incinerators must be constructed and operated in accordance with performance standards and conditions specified by environmental permits issued by the regulatory agencies. Changes to an incinerator's permitted design or operating conditions must be approved through a formal modification process. A public review and comment period is generally required prior to approval of the initial construction authorization and during the evaluation of requests for significant modifications to the detailed permit requirements.

Congress specified in Public Law 100-456 that operational verification tests should be completed on Johnston Island prior to the start of full-scale disposal operations. These tests were designed to (1) verify that reverse assembly high-temperature incinerators can safely destroy chemical munitions and bulk agents while meeting applicable state and federal environmental regulations and (2) test the reliability of the mechanical process. The operational verification tests are divided into four phases, two of which have been completed. First, the Army destroyed rockets containing the nerve agent GB. Second, the Army recently completed destruction of rockets containing the nerve agent VX. Third, the Army plans to destroy one-ton containers filled with the mustard agent HD. Lastly, the Army plans to destroy projectiles containing this mustard agent.

The Tooele chemical disposal facility is the first of the eight facilities to be constructed stateside. The Army determined that since this site contained more chemical munitions and agent than the other storage sites, it was the facility that needed to be constructed early in order to meet the then-1997 program completion date. The Tooele contract was awarded in September 1989, and the Army reported in April 1992 that construction would be completed in July 1993 and disposal of chemical munitions would start in February 1995.

The Army initially planned to finish all the verification tests at Johnston Island before completing the remaining stateside disposal plant designs and acquiring most equipment. This plan would have allowed the Army to take advantage of lessons learned from tests prior to commitment of substantial funds. However, the Army currently plans to start ordering equipment in August 1992, after the start of the third verification test phase, to avoid further delays. This plan is consistent with direction in the fiscal year 1992 DOD appropriations act.

In prior reports, we expressed concern about the Army's lack of progress in and the rising cost of the Chemical Stockpile Disposal Program. In a May 1990 report, we concluded that the costs of the program would likely continue to escalate and that the Army would probably not meet the congressionally mandated completion date of April 30, 1997.[4] In a July 1990 report, we concluded that if the Army continued to experience further delays at the Johnston Island facility, costs would continue to increase.[5] In our November 1991 report, we stated that continued problems in the Army's disposal program indicated that increased costs and additional time to destroy the chemical stockpile should be expected.[6]

THE ARMY RELIED ON TEMPORARY AND SPECIAL AUTHORIZATIONS TO EXPEDITE PROGRAM COMPLETION

Despite the importance of public involvement in environmental permit decisions, the Army began incinerating munitions at the Johnston Island facility under a temporary authorization and initiated preliminary construction at the Anniston site under special authorization before soliciting public comment and scrutiny. The Army convinced regulatory officials that these authorizations were warranted to avoid further delays in completing congressionally mandated operational verification tests and to avoid possible loss of funding for construction of stateside facilities. The Army will likely not be able to continue to rely on similar actions to expedite program completion.

In August 1985, the EPA regional office in San Francisco authorized construction of the Johnston Island facility. The initial permit specified the detailed conditions under which the facility was to be constructed and operated. During subsequent construction and pre-operational testing the Army adopted numerous modifications to the original design and operating conditions. For example, the Army changed incinerator sizes, waste stream feed rates, and operating temperatures. Starting in April 1988, EPA and the Army began efforts to formally incorporate the many changes into a revised operating permit. We were told that 2 years later, in April 1990, just before the Army wanted to start toxic agent incineration, Army officials asked the EPA regional administrator how the approval process could be expedited. Following these conversations the Army requested a temporary authorization to begin operations under the modified conditions.

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[4]Chemical Weapons: Obstacles to the Army's Plan to Destroy Obsolete U.S. Stockpile (GAO/NSIAD-90-155, May 24, 1990).

[5]Chemical Weapons: Stockpile Destruction Delayed at the Army's Prototype Disposal Facility (GAO/NSIAD-90-222, July 30, 1990).

[6]Chemical Weapons: Stockpile Destruction Cost Growth and Schedule Slippages Are Likely to Continue (GAO/NSIAD-92-18, Nov. 20, 1991).

The Army's temporary authorization request, submitted to EPA on April 30, 1990, argued that there was insufficient time in the disposal program schedule to permit full consideration and evaluation of public comment. Moreover, the Army stated that funding for construction of stateside facilities would have been jeopardized.

In June 1990, after reviewing the technical merits of the Army's requested permit modifications, the EPA temporarily authorized the changes. Between July 1990 and February 1991 the Army completed the first phase of operational verification tests, destroying 7,490 rockets containing nerve agent. During this time, public comments and concerns were being solicited and analyzed by the Army and the EPA. Formal approval of the permit modifications did not occur until May 1991. While numerous start-up problems occurred during the initial incineration phase, including one low-level release of agent to the atmosphere, EPA concluded that human health and safety were not compromised as a result of the granting of the temporary authorization.

Federal regulations enable regulatory agencies to temporarily authorize the implementation of environmental permit changes under certain conditions. Temporary authorization may be granted to prevent disruption of ongoing waste management programs and to protect human health and the environment. EPA allowed the Army to begin operations under temporary authorization because timely completion of the congressionally mandated chemical weapons disposal program was considered to be a national priority.

In Alabama, state environmental regulators in September 1990 allowed the Army to start preliminary construction of the Anniston facility even though an environmental permit will likely not be issued until October 1993. This work involves raising the site foundation by 25 feet. Army officials estimated the cost of the site preparation work at $1.9 million. Again the Army maintained that early approval to proceed with preliminary site preparation was justified in order to avoid additional delays in the execution of the disposal program. Under the Resource Conservation and Recovery Act, an incinerator operator must have a permit prior to construction of an incinerator. Federal regulations have defined physical construction to include excavation and movement of earth. The Army's general counsel warned that even permission from the environmental regulators to raise the incinerator site elevation would not insulate the Army from potential lawsuits filed by concerned citizens.

The Assistant Secretary of the Army (Installations, Logistics, and Environment) recently acknowledged that although safety and environmental protection were always important considerations, past decisions had placed undue emphasis on expeditious program completion. She further stated that in the future, adherence to schedules would no longer be a major factor in program decisions.

Additionally, some state environmental regulators told us that they probably would not allow the Army to operate under temporary authorizations because of public sensitivity to the disposal program.

PUBLIC OPPOSITION MIGHT DELAY OR PROHIBIT INCINERATOR CONSTRUCTION

Safety concerns and opposition to chemical weapons incineration has led Kentucky, Indiana, Maryland, and Colorado to either enact or consider enactment of legislation that could delay or even prevent construction of chemical weapon incinerators. Opposition centers around concerns about the health and environmental hazards that could result from incineration of chemical weapons.

Laws in both Kentucky and Indiana require the Army to demonstrate the absence of any acute or chronic health or environmental effects from the incineration of chemical weapons prior to obtaining an environmental permit. A similar bill in Maryland was proposed but never passed. A Maryland group opposing the Aberdeen incinerator hopes to have the same bill proposed again. Legislation proposed but not acted on in Colorado would have prohibited the state from accepting applications for hazardous waste incinerators until federal agencies studied the effects of hazardous waste incineration on people and animals. An additional Kentucky law requires state officials to certify that incineration is the safest technology for destroying chemical weapons. Kentucky environmental officials will be required to consider the risks associated with transportation and disposal technologies currently in use as well as those still under development.

The Resource Conservation and Recovery Act allows states to establish regulations more stringent than federal standards. Although the act is intended to minimize potential health hazards, some states want complete assurance of no long-term health effects. According to the Centers for Disease Control in Atlanta, Georgia, to adequately document and ensure that incinerator emissions do not cause cancer, a 30-year epidemiological study of persons living in a community surrounding an incinerator would need to be conducted. Such requirements could therefore delay permit approval indefinitely.

The Army has not decided how it will comply with such restrictive legislation, nor has it established a contingency plan in the event that a state denies the Army an environmental permit.

The Army has taken steps to minimize the potential environmental risks of high-temperature incineration at Johnston Island. Army policy requires an immediate halt to the flow of chemical agents to the incinerator and the orderly shutdown of furnaces if as little as 20 percent of EPA's allowable agent emission is detected in the exhaust stack. The Army has also taken steps to monitor and

control toxic emissions, including dioxins and furans. Dioxins and furans have been linked to cancer and other long-term health problems. To address these concerns, the Army (1) decided not to burn chemical protective suits, which could produce these types of emissions, and (2) will measure possible dioxin, furan, and other emissions from incineration of mustard agent during upcoming operational verification tests. According to Army officials, this monitoring is not required by EPA.

FISCAL YEAR 1993 FUNDS MAY NOT BE NEEDED

Because of probable delays in obtaining environmental permits needed to start construction, the Army's fiscal year 1993 funding request for construction and incineration equipment at two sites, totaling $163.4 million, could be deferred. At Anniston, the Army requested funds based on its plan to start major construction efforts in June 1993 despite notification by the state that requisite environmental permits will not be issued until October 1993 at the earliest. Hoping to expedite approval of its environmental permits for the Anniston site, Army managers have held discussions and corresponded with senior Alabama officials, including the governor. However, Alabama Department of Environmental Management officials we spoke with continue to estimate that approved permits will not be granted until October 1993. This estimate also is documented by internal Army correspondence. Unless the Army can obtain assurance from the state of Alabama that the permit will be granted in fiscal year 1993, requested fiscal year 1993 funding for construction totaling $105.3 million and for equipment acquisition totaling nearly $49 million could be deferred to fiscal year 1994.

Receipt of environmental permits for construction of an incineration facility at Lexington by May 1994 is also unlikely given the increasingly strict state regulations and vociferous public opposition. The Kentucky state legislature has enacted legislation that places additional stringent requirements on the Army. Also, local opposition to the facility is strong and well organized. Army officials agreed that they will likely experience problems obtaining permits in Kentucky and acknowledged that requested fiscal year 1993 funds for the purchase of incineration equipment totaling $9.1 million will not be needed.

MECHANICAL DIFFICULTIES COULD THREATEN PROGRAM SCHEDULE AND CAUSE COST GROWTH

While it has been demonstrated that the Johnston Island facility can successfully destroy chemical weapons, the facility has not performed as well as the Army initially predicted. Because of unexpected mechanical problems, destruction rates and operating time have fallen short of goals. The Army's estimated program costs and completion date will be in jeopardy if (1) destruction rates experienced at the Johnston Island facility are not

substantially increased at the other facilities or (2) further unanticipated problems are encountered.

Total program costs have already increased from $1.7 billion in 1985 to a current estimate of $7.9 billion. Including the fiscal year 1993 budget request, the Army has already spent or requested over $2.2 billion in support of the program. In April 1992, the Assistant Secretary of the Army (Installations, Logistics, and Environment) informed the Congress that it was reasonable to assume that costs would continue to escalate. The Assistant Secretary cited (1) continuing delays in operational verification tests, (2) operational problems, (3) increasingly stringent state and federal environmental requirements, and (4) possible legal challenges by concerned citizens as factors that could significantly increase the cost and length of the program.

While the Johnston Island facility's performance improved during the second testing phase, and federal regulators indicate that these tests were conducted safely and within environmental standards, unanticipated maintenance downtime continued to slow the rate of destruction. The phase two average destruction rate of 12 rockets per hour more than doubled the average phase one rate of 5 rockets per hour, but the system's operating hours increased only minimally from 33 percent of scheduled hours in phase one to 44 percent of scheduled hours in phase two. Destruction schedules and operating budgets for stateside incinerators assume system availability rates between 80 and 90 percent. Destruction rates for the first and second phase and goals for all phases of operational verification tests are shown in table 1.

Table 1: Operational Verification Tests at Johnston Island

Phase	Agent/ munition	Duration of test (weeks)	Total items to be destroyed	Destruction rates (avg. per hour)	
				Total test	Last month
1	GB/M55 rocket	16(G) 32(A)	9984(G) 7490(A)	13.0(G) 5.0(A)	24.0(G) 13.0(A)
2	VX/M55 Rocket	16(G) 19(A)	13,889(G) 13,889(A)	13.0(G) 12.0(A)	24.0(G) 19.0(A)
3	HD/ton containers	3(G)	67(G)	0.5(G)	0.5(G)
4	HD/M105 projectiles	17(G)	23,200(G)	30.5(G)	56.0(G)

Legend
G = goal
A = actual experience (GAO calculation for VX rocket rate)

In spite of the results of its tests, the Army continues to base life-cycle costs and schedules on estimated data that do not incorporate actual experiences. For example, the schedule requires that future sites operate 24 hours per day even though the Army generally has not been able to maintain operations at the Johnston Island facility for the scheduled 10 hours per day during phase two of the operational verification tests. During this test phase, the incineration facility experienced unscheduled downtime for various reasons on an almost daily basis and was operational for the scheduled 10 hours only 14 of 102 days.

The greatest single source of maintenance downtime was caused by an explosion in the deactivation furnace that destroys explosive material. The system was shut down for 16 days to inspect and repair a 2-inch by 8-inch hole in the furnace caused by the explosion. The explosion did not result in the release of chemical agent to the atmosphere, nor did it cause any injuries, and damage was limited to the furnace itself. An Army report on the incident concluded that the explosion was a low probability event that could be expected on an infrequent basis. The Army recognized the potential for this problem before the explosion and had already decided to increase the thickness of the deactivation furnace wall in stateside facilities, making the furnace more resistant to detonations. In addition, Army officials said that the Army plans to retrofit the Johnston Island deactivation furnace with thicker walls.

OBSERVATIONS

We are in the process of completing our field work and should be issuing a final report to you in the fall of this year that will present our recommendations on these issues. However, based on our work to date, we believe the Army could begin to address the problems we have outlined today by taking the following steps:

-- Placing priority emphasis on the timely submission of permit applications and modification requests that conform to state agencies' processing schedules. Specifically, the Army could (1) ensure that requests for permit applications, and modifications to previously approved permit applications, are submitted in time to allow for orderly processing and full public review and comment and (2) work closely with state officials to quickly resolve problems with the applications.

-- Developing a contingency plan for the disposal of the U.S. stockpile of chemical weapons. In the event that restrictive legislation, cost, or other factors preclude completion of the current plan, the Army should be prepared for the orderly transition to another alternative.

In addition, as previously communicated to you, we support the deferral of requested fiscal year 1993 funding for the Anniston and Lexington facilities. Funding for construction amounting to $105.3 million and equipment totaling $49 million will not be needed because environmental permits for Anniston likely will not be granted until fiscal year 1994. Also, $9.1 million requested by the Army for equipment acquisition at Lexington is not needed because of likely delays in the receipt of environmental permits and public opposition to high-temperature incineration.

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Mr. Chairman, this concludes my testimony. We will be happy to answer any questions you or the Subcommittee Members may have at this time.

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