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GAO's Views on DOE's Environmental Restoration and Waste Management Five-Year Plan

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Before the
Committee on Governmental Affairs
United States Senate

Mr. Chairman and Members of the Committee:

We are pleased to provide our views on the Department of Energy's (DOE) Environmental Restoration and Waste Management Five-Year Plan. This plan lays out a $19.1 billion effort over the next 5 years (fiscal years 1991 through 1995) to (1) bring DOE facilities into compliance with environmental laws, (2) begin cleaning up environmental contamination at DOE sites, and (3) manage the wide variety of radioactive and hazardous waste which DOE generates. In addition, the plan begins implementing an applied research and development program to help resolve DOE's environmental problems.

Since 1981, Mr. Chairman, GAO has testified many times and issued numerous reports dealing with environmental, safety, and health problems associated with DOE's nuclear weapons complex. More than 3 years ago, we recognized the huge backlog of environmental problems facing DOE and recommended that DOE develop an environmental strategy which, among other things, would provide the Congress with a comprehensive report on DOE's plans to clean up existing contamination and bring its facilities into full compliance with environmental laws. In March 1987, before this Committee, we recognized a broader need and recommended that DOE develop an overall strategy for its weapons complex which, in addition to providing details for addressing the environmental problems, would also address modernization of the complex and

safety problems. When we made these recommendations, we believed such plans were necessary for the Congress and the nation to fully understand the scope and significance of the problems facing DOE.

Over the last year and a half, DOE has issued several reports and plans on these important national issues. These include the Environment, Safety, and Health Report for the Department of Energy Nuclear Defense Complex, dated July 1988; the Environment, Safety, and Health Needs of the U.S. Department of Energy, dated December 1988; the United States Department of Energy Nuclear Weapons Complex Modernization Report, dated December 1988; and, most recently, the Environmental Restoration and Waste Management Five-Year Plan, issued in August 1989.

Certainly, DOE's 5-year plan is an important first step in beginning to lay out an approach for cleaning up its facilities and bringing its operations into compliance with environmental laws. It also begins to provide Congress the type of information it needs to exercise effective oversight. The next step is to develop effective programs to deal with these problems.

With this in mind, my testimony today highlights three important observations about implementing DOE's 5-year plan. First, the cost estimates for resolving the environmental problems remain uncertain. Second, new technologies are not yet available to deal with all cleanup problems or reduce the cost of cleanup.

Finally, a long-term national commitment will be needed to resolve the problems. However, before I discuss these observations let me briefly put in perspective the environmental problems DOE faces.

DOE'S ENVIRONMENTAL PROBLEMS

In making nuclear weapons, enormous amounts of hazardous and radioactive waste are generated. Historically, this waste was disposed of by methods that allowed it to enter the environment. Some general examples of the waste disposal practices used throughout the complex include shallow land burial for solid waste, and direct discharge of liquid waste into surface impoundments, trenches, and seepage basins. Compounding DOE's environmental problems were storage tanks that leaked and accidental spills from normal operations.

These practices and mistakes have resulted in serious unresolved environmental problems. Specifically, we have called attention to:

-- Leakage from high-level radioactive waste tanks. Over 60 of the 149 single-shell tanks at Hanford, Washington, have leaked or are suspected of leaking high-level radioactive waste into the environment. Some of these leaks were detected more than 25 years ago.

-- Groundwater contamination at numerous facilities throughout the complex. As a result of past disposal practices, the groundwater at many DOE facilities has become contaminated with hazardous and/or radioactive material, some at levels hundreds to thousands of times the drinking water standards. Some contaminated groundwater has migrated off-site.

-- Inactive waste sites. DOE has identified over 3,000 inactive waste sites throughout the complex. Many of these sites contain toxic, hazardous, and/or radioactive material.

-- Noncompliance with environmental laws. DOE has had difficulty in maintaining compliance with environmental laws. Most of the sites in the weapons complex need corrective actions under air, water, or solid-waste regulatory requirements.

Compounding these and other environmental problems have been management problems within DOE, including an attitude among some DOE personnel to overlook serious environmental problems. DOE historically has emphasized production objectives over environmental and safety concerns.

COST ESTIMATES STILL UNCERTAIN

As we learned more about the significance of these problems, the cost estimates grew. We have reported that, in total, about $35 billion to $65 billion may be needed to clean up environmental contamination, and another $3 billion to $9 billion to bring DOE's operations into compliance with environmental laws.

The 5-year plan provides DOE's latest estimates on what will be needed to address environmental problems at DOE during fiscal years 1991 through 1995. The plan proposes a 30-year goal for cleaning up DOE sites and outlines a $19.1 billion program for environmental corrective action ($690 million), environmental restoration ($6.8 billion), and waste management ($11.6 billion) at DOE sites for fiscal years 1991 through 1995. It is important to note that this $19.1 billion figure covers only a portion of the total eventual cost needed to address environmental problems and that the cost estimates contained in the plan may increase. In that regard, the plan will be updated each year to cover the ensuing 5-year period.

The 5-year plan begins a program that will take decades to resolve. The costs outlined in the plan are only projected for 5 years and thus represent only a portion of what may eventually be needed. For example, the plan calls for $6.8 billion for environmental restoration over the next 5 years, but the eventual

costs may be as high as $35 billion to $65 billion. Thus, the plan should be viewed as a first step to solving the problems rather than as a solution, and the Congress should expect DOE's cleanup efforts to have a long-term budgetary impact.

We also believe that the cost estimates contained in the plan over the next 5 years will likely increase. For example, while the plan was being developed, DOE's funding requirements for fiscal year 1990 increased by $357 million beyond what was contained in the proposed budget. Further, recent information provided to us by the outgoing contractor (Rockwell International Corporation) at the Rocky Flats Plant indicates a 38-percent increase of $178 million is needed for the period fiscal year 1991 through 1995 beyond what is contained in the 5-year plan.

Further, as noted in our previous work, the full scope and magnitude of the environmental problems are not known at many DOE facilities since DOE is in the early phases of characterizing the problems. Our experience in studying the environmental problems within DOE has shown that costs generally increase as more is known about the problems. In the 5-year plan, DOE assigned a "low confidence" level to many of the cost estimates. This low confidence level means that DOE does not yet have sufficient information to develop budget quality estimates. For example, our analysis of DOE data for the Hanford Reservation, which has about 1,000 inactive waste sites, shows that the cost estimates for more

than 70 percent of the proposed restoration activities have a "low confidence" level attached to them. This "low confidence" level is indicative of the study phase that DOE is in regarding cleanup of its waste sites. Our experience in evaluating the Superfund program administered by the Environmental Protection Agency (EPA) indicates that the less that is known about the extent of contamination, the more likely the cost estimates will increase. Since, at the vast majority of DOE sites the contamination has not been fully characterized, cost increases will be likely.

NEW TECHNOLOGIES ARE NOT YET AVAILABLE

To support DOE's 30-year cleanup goal and significantly reduce overall program costs, the 5-year plan outlines an aggressive DOE effort to develop and implement new technologies for environmental restoration and waste management. This research includes developing new technologies to minimize waste, developing improved environmental restoration technologies, and developing improved applications of existing technologies. In October 1989, DOE issued a predecisional draft of its Applied Research, Development, Demonstration, Testing, and Evaluation Plan to develop new technologies for environmental restoration and waste management.

While we have not had the opportunity to review this plan in detail, I would like to make some overall observations based on our experience in evaluating DOE programs. It is possible that new

technologies could dramatically reduce costs in both the environmental restoration and waste management areas and it does make good sense for DOE to explore that potential. Much of this cost savings occurs because radioactive and contaminated material or soil would not have to be extracted for possible shipment to other locations. This is particularly important because reaching agreements with state and local governments on the location of waste repositories has become increasingly difficult.

One promising example is "in situ vitrification"--solidifying waste in place into a glass-like structure. This technology can be applied to numerous waste sites instead of the costly process of removing, treating, and disposing of such waste. At the Hanford Reservation, DOE estimates that this technology could reduce their remediation costs at certain sites by as much as 44 percent. Other technologies offer similar potential for cost reduction. However, the plan does not provide any detailed cost savings that could eventually be realized.

This Committee and the Congress should not expect dramatic results any time soon. Many of these technologies are years away from being feasibly applied. For example, in situ vitrification is, according to DOE, at least 5 years away from application. I should also point out that issues might exist regarding the long-term care of areas where the waste is treated in situ. DOE projects that other new technologies will not be available for at

least 10 to 15 years. Further, developing these technologies will be costly and could, according to DOE data, amount to more than $200 million a year. Thus, the Congress will have to make decisions and tradeoffs regarding the proper balance between funding research and development looking for new ways to solve the problems and funding their resolution through more conventional methods. Finally, DOE has not always had a successful history in developing and applying new technologies. Thus, there is risk that these technologies may not fully realize their promise either in reducing cost or resolving environmental problems.

THE NEED FOR A NATIONAL COMMITMENT

Finally, I want to talk about the need for a national commitment to support DOE's efforts in putting its house in order. This commitment is crucial because of (1) the huge, long-term costs involved, (2) the number of organizations involved, and (3) the contentious nature of the issues. As a result, finding solutions to DOE's problems will be extremely difficult.

Whether they view DOE's problems in a 1-year, 5-year, or 30-year context, the Congress must realize that resolving the problems will be extremely costly--amounting to billions of dollars each year for decades. Because of this, a strong, bipartisan congressional commitment will be needed to adequately fund DOE's programs over the next 30 years in the face of enormous budget

deficits and competing demands for limited funds. Maintaining this congressional commitment will be further complicated by funding requirements that can change considerably from one year to the next.

While DOE must take the lead in resolving its environmental problems, many other organizations such as state and local governments, Indian tribes, and other Federal agencies all have legitimate concerns in resolving them too. For example, EPA has legal responsibilities overseeing certain DOE operations. In addition, the states have authority to set certain standards that DOE must meet, and these standards may vary from state to state. Further, DOE has commitments under various agreements with EPA and certain states regarding how it will conduct its activities and pace its cleanup actions. These and future agreements as well as possible future legislation can all affect the long-term cost of resolving the problems. The support of these organizations in the coming years will likely depend on DOE's ability to convince the public that it can operate its facilities and deal with its problems in a safe and environmentally acceptable manner.

Achieving a national commitment will also be difficult because of the contentious nature of some of the problems. For example, the states that have the contaminated sites and/or temporarily stored waste want the problems resolved or the waste removed. Removing the waste may be difficult because no one else wants to

receive it. In addition, many states are concerned about having the waste transported across their boundaries to other locations. The State of Colorado has notified DOE that when the current on-site waste storage limit for the Rocky Flats Plant is reached, no further generation of waste will be permitted. The State of Nevada has stated that it will not permit DOE to build its proposed high-level radioactive waste disposal site at Yucca Mountain, nor will it even permit DOE to do test drilling there. Resolving all these problems requires that DOE work closely with the states to reach agreements that adequately address national as well as state concerns.

SUMMARY

During the past year the Congress has had the opportunity to view numerous plans to deal with DOE's problems. The candid discussion of these plans is necessary if we as a nation are going to reach a consensus on an overall strategy and detailed implementation plan for correcting DOE's problems. The national consensus as well as DOE's plans are still developing.

The 5-year plan adds to the national debate. I believe its good points are the 30-year goal for achieving cleanup and a companion research and development plan for new technologies. However, I want to stress that DOE's problems are long-term and their resolution is far beyond the 5-year projections contained in

the plan. Further, while new technologies offer the promise of cost reductions, the technologies are not mature enough to be implemented now on a wide-scale basis to substantially reduce costs and ensure resolution of the problems.

Today, we have a better understanding of the environmental problems facing the complex. However, DOE is still, to a large degree, in the study phase and is continuing to develop information on the extent of these problems and their possible solutions. Although environmental solutions will be costly and difficult, specific long-range plans are important so that the Congress can judge the pace and direction of DOE's cleanup program.

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Thank you. That concludes my testimony. We would be happy to answer any questions.

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