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Report to the Chairman, Subcommittee on  
Regulation and Business Opportunities,  
House Committee on Small Business

March 1988

# NUCLEAR HEALTH AND SAFETY

## Summary of Problem Areas Within the DOE Nuclear Complex



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United States  
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Washington, D.C. 20548

Resources, Community, and  
Economic Development Division

B-222195

March 28, 1988

The Honorable Ron Wyden  
Chairman, Subcommittee on Regulation and  
Business Opportunities  
Committee on Small Business  
House of Representatives

Dear Mr. Chairman:

In your letter of June 3, 1987, you requested that we evaluate the socioeconomic impact of future Department of Energy (DOE) operations at Hanford, Washington. Specifically, you requested us to evaluate or determine the following:

- job losses due to phaseout of the N-Reactor and associated reprocessing facilities,
- the potential job gains from phasing in defense waste cleanup and decommissioning activities,
- whether workers employed at any phased-out facility would continue to be employed as part of any expanded environmental cleanup activity, and
- the extent that cleanup activities would generate new opportunities for business in the region.

Subsequently, we discussed with you and your staff the difficulties in adequately responding to the socioeconomic questions at Hanford. As a result, you asked that we report why we could not fully respond to your Hanford request and also provide you our perspective on the significant problem areas within the DOE weapons production complex that need correcting. Appendix I provides a more detailed discussion of our review objective, scope, and methodology.

As you know, DOE is in the process of better characterizing the extent and severity of environmental and safety problems that exist not only at the Hanford Reservation but at many DOE installations nationwide. Correcting these problem areas could lead to a major restructuring of the nuclear defense complex. As a result, it is not possible for us to provide meaningful answers to your socioeconomic questions about DOE's operations at Hanford.

In March 1986 we reported on DOE's efforts to dispose of transuranic waste—a special type of radioactive waste.<sup>3</sup> In response to a congressionally mandated plan, DOE began a multibillion dollar effort to put transuranic waste 2,150 feet underground in a geological repository. However, we noted that DOE expects to send only 19 percent of the existing transuranic waste there. DOE had no commitment regarding permanent disposal of the remaining 81 percent that is currently buried at six locations around the country. At the Hanford Reservation over 90,000 cubic meters of this waste is buried. We recommended in this report that DOE provide the Congress with complete information on its plans and cost for permanently disposing of this buried waste. In response to our recommendation, DOE revised its plans and developed three options for disposing of this waste. DOE did not make a decision which option it plans to implement. Further complications arose recently when DOE announced that water was leaking into the geological repository. The repository is supposed to begin receiving waste in late 1988, but DOE has said it will not become operational until further studies are completed and the leakage problem resolved.

In September 1986 we reported on environmental conditions at nine facilities, including the N-Reactor and the reprocessing plant at the Hanford Reservation.<sup>4</sup> Among other things, we found groundwater contamination at these facilities and that some facilities were not in full compliance with the Clean Water Act. We also noted that DOE was studying the contamination problem to better characterize the extent, type, and movement of the contamination. We recommended in this report that DOE officials develop a comprehensive plan that sets out milestones and cost estimates to bring its facilities into full compliance with all applicable environmental laws. In response, DOE officials told us that they are conducting environmental surveys at all major installations to better determine the nature of their environmental problems. DOE plans to issue a report on these surveys in 1989.

In November 1986 we reported on waste management practices at the Hanford Reservation.<sup>5</sup> We found that Hanford has been slow to identify all areas that should be regulated under the Resource Conservation and

<sup>3</sup>Nuclear Waste: Department of Energy's Transuranic Waste Disposal Plan Needs Revision (GAO/RCED-86-90, Mar. 21, 1986).

<sup>4</sup>Nuclear Energy: Environmental Issues at DOE's Nuclear Defense Facilities (GAO/RCED-86-19, Sept. 8, 1986).

<sup>5</sup>Nuclear Waste: Unresolved Issues Concerning Hanford's Waste Management Practices (GAO/RCED-87-30, Nov. 4, 1986).

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accounting of funds to comply with the RCRA and CERCLA legislation.<sup>8</sup> While meeting the requirements of these laws could cost billions of dollars, we found DOE cannot readily identify its funds budgeted for compliance with these environmental laws and thus can provide only estimates. DOE is in the process of restructuring some of its budgeting and accounting systems for environmental cleanup. However, because a major portion of DOE compliance activities was not restructured, we recommended DOE specifically identify in its future budgets all of its RCRA and CERCLA funds and separately account for them.

As you can see, two important areas we have emphasized in our work are the need for outside independent oversight of DOE's operations and comprehensive plans to address the problems that DOE faces. Various pieces of legislation are now before the Congress to provide outside independent oversight. Such oversight is important to ensure the public and the Congress that DOE facilities are safe and that safety problems are corrected in a timely fashion. For example, DOE took about 6 years to approve safety analysis reports for some high risk facilities after we noted in a report that many of these reports were never approved. In the area of developing comprehensive plans, DOE has not been as thorough or as timely as we would like. For example, in developing a congressionally mandated plan on transuranic waste, DOE did not address a major portion of the problem—such waste that is already buried at various locations around the country. Further, DOE is still developing environmental remedial action plans that we called for a year and a half

ago. DOE needs well conceived plans that spell out not only the future role of all the defense facilities at Hanford but also what new facilities are needed. For example, while the N-Reactor is now in "cold standby" status, it is uncertain how long the reactor will be kept in this status, or when it will be decommissioned. Each option would have different impacts on the work force at Hanford. The strategy should also enumerate what new facilities will be built at Hanford, the disposition or rehabilitation of old facilities, and the extent environmental problems will be addressed. Without such plans, no clear integration of current or short-term needs to long-term needs can occur so as to avoid expenditures on unneeded or low priority activities. Furthermore, neither DOE nor the Congress is in a position to make the most meaningful decisions about the nuclear defense complex. Therefore, DOE needs to complete its plan

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<sup>8</sup>Environmental Funding: DOE Needs to Better Identify Funds for Hazardous Waste Compliance (GAO/RCED-88-62, Dec 16, 1987).

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# Major Contributors to This Report

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# Objective, Scope, and Methodology

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On June 3, 1987, the Chairman, Subcommittee on Regulation and Business Opportunities, House Committee on Small Business, requested that we estimate the socioeconomic impacts of future DOE operations at the Hanford site, Washington. In subsequent discussions with the Chairman's office, we discussed the difficulties of adequately responding to socioeconomic questions. As a result, we agreed to report on what we could not fully respond to the Hanford request and our perspective on the interrelated major problem areas needing correction within the DOE complex.

DOE needs to rebuild, clean up, and improve safety at its installations around the nation including Hanford, Washington. Because it is difficult to determine how, where, and in what time frame these corrective actions will be taken, it is not possible for us to provide meaningful answers to socioeconomic questions.

In providing our perspective on the interrelated major problem areas within the DOE complex, we relied heavily on our previously issued reports. These reports are footnoted where appropriate. In addition, through discussions with DOE officials at headquarters, we updated our information on DOE's progress in implementing our recommendations. Finally, we supplemented this information with various DOE staff internal documents that related to our findings in previously issued reports. Our work was conducted in March 1988.

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to ensure that available funds in a deficit-conscious environment targeted to the most critical needs.

During our ongoing work regarding the DOE weapons complex, we are monitoring DOE efforts to develop plans that will more clearly show future facility requirements of the complex as well as the environmental problems that need to be addressed. As these plans become available, we will be happy to discuss with your staff both the plans and their impact on DOE operations at Hanford.

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Our work was performed in accordance with generally accepted auditing standards. At your request, we did not obtain official agency comments on a draft of this report.

Unless you publicly announce its contents earlier, we plan no further distribution of this report for 30 days from the date of the letter. At that time we will send copies to the appropriate congressional committees, the Secretary of Energy; the Administrator, Environmental Protection Agency; and the Director, Office of Management and Budget. We also make copies available to others upon request.

This work was performed under the direction of Keith O. Fultz, Associate Director. Other major contributors are listed in appendix A.

Sincerely yours,



J. Dexter Peach  
Assistant Comptroller General

Recovery Act of 1976 (RCRA) and has not identified all sites under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA). For example, in July 1986 Hanford reported about half of its CERCLA sites. We also reported that Hanford does not have an effective groundwater monitoring system at some sites where releases of hazardous material. We recommended that DOE identify current and previously used waste treatment, storage, and disposal and the corrective actions required for each. DOE is still in the process of identifying some disposal sites and the necessary corrective actions.

In March 1987 we testified on the deteriorating condition of DOE's nuclear defense complex.<sup>6</sup> We listed a variety of unresolved safety and environmental problems that DOE must address. We used this opportunity to recommend that DOE develop an overall strategic plan that sets forth the programmatic requirements for the nuclear defense complex; a comprehensive picture of the environmental, safety, and health issues facing DOE; and solutions to resolve them. The plan should provide a comprehensive picture of what DOE's nuclear defense complex will look like in the year 2000 and beyond and provide a road map of how we can get from here to there. DOE is developing an overall plan to modernize its complex. The plan is scheduled to be released in December 1988.

In June 1987 we reiterated our position that DOE needs independent oversight of various aspects of its nuclear activities.<sup>7</sup> In this testimony we set forth five key elements that should be incorporated into an independent oversight approach. These are (1) independence, (2) technical expertise, (3) the ability to perform reviews of DOE facilities as needed, (4) authority to require DOE to address the organization's findings and recommendations, and (5) a system to provide public access to the organization's findings and recommendations. We believe that these elements will serve as useful criteria in assessing any proposal that the Congress should consider.

Finally in December 1987, after performing work at DOE headquarters and the Hanford Reservation, we issued a report on DOE's budget.

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<sup>6</sup>Environmental, Safety, and Health Aspects of the Department of Energy's Nuclear Defense Complex (GAO/T-RCED-87-4, Mar. 12, 1987).

<sup>7</sup>Key Elements of Effective Independent Oversight of DOE's Nuclear Facilities (GAO/T-RCED-87-4, June 16, 1987).

Many of DOE's facilities are deteriorating to the point that new facilities or major upgrades are needed to maintain the nation's capability to produce nuclear material. Important safety and environmental concerns have been raised by us and others about DOE reactors and other DOE defense facilities. Costly cleanup efforts are needed at many DOE facilities around the nation. In our view, tens of billions of dollars will be needed to rebuild, clean up, and improve safety at DOE installations. In fact, at a recent hearing before a House Subcommittee, the Under Secretary of Energy stated that environmental cleanup at DOE facilities could cost as much as \$100 billion. However, at this time it is unclear how, where, and in what time frame these corrective actions will be accomplished.

Our reports over the last few years on Hanford and DOE defense facilities in general have identified a number of important problems. Overall, we have repeatedly called for outside independent oversight of DOE's operations and for DOE to fully define the scope of its problems and set forth detailed plans to resolve the problems. Key excerpts from several of our reports and testimonies on these important problems are discussed below.

In June 1986 we reported on DOE safety analysis reports for eight DOE's operating facilities—including the N-Reactor and the reprocessing facility at Hanford.<sup>1</sup> These reports are important documents that DOE uses to show that its facilities are safely designed, constructed, and operated. Our review showed that some safety reviews have not been approved by DOE. This was similar to a conclusion reached 5 years earlier that DOE had been lax in completing safety reviews for high level waste facilities.<sup>2</sup> In our June 1986 report we also pointed out that some safety reviews provided little or no comparison with safety design criteria. In some cases, different assumptions were used in analyzing serious accidents. We noted that DOE's safety review process is an internal DOE function controlled primarily by DOE field offices. Because an effective and well-accepted safety review process is the key to demonstrating that a nuclear facility can be safely operated, we made a number of recommendations to ensure that DOE has a credible safety review process, including the need for outside independent reviews.

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<sup>1</sup>Nuclear Safety: Safety Analysis Reviews for DOE's Defense Facilities Can Be Improved (HRCED-86-175, June 16, 1986).

<sup>2</sup>Better Oversight Needed for Safety and Health Activities at DOE Nuclear Facilities (EMC-81-10, Aug. 4, 1981).

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