

Chapter 4

Policy Initiatives To Improve Cleanup Prospects

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Policy Initiatives To Improve Cleanup Prospects

IMPROVING PROSPECTS FOR CLEANUP

The waste and contamination problems at the Department of Energy (DOE) Nuclear Weapons Complex are serious and complicated, and the resources required to deal with them are great. Citizens at the community and national levels have expressed concern about the potential health and environmental impacts of conditions at the complex, urging that sites be cleaned up to minimize the risks. The present state of technology, however, does not offer reliable techniques with which to characterize and remediate contaminated soil or water, or to safely treat, store, and dispose of accumulated waste. Nor have waste disposal standards and cleanup levels that protect public health and the environment been developed, agreed to, or applied at each site. Also, it is unlikely that the necessary technology and resources will be available to meet the requirements for site characterization and for interim containment or long-term remediation.

A key issue in evaluating the prospects for cleaning up waste and contamination at the Weapons Complex is whether the strategies and priorities for waste management and environmental restoration being pursued by DOE and other involved parties will actually result in cleanup and attain public acceptance. The responsible State and Federal agencies are attempting to carry out their legally mandated responsibilities with respect to waste management and environmental restoration at the Weapons Complex. However, they have yet to develop an effective process for making sound and credible policy and technical decisions about cleaning up waste and contamination problems at the sites. Adequate personnel and "infrastructure" are lacking. Also missing is continuous and effective coordination within and among the government agencies that have operational, research, or regulatory responsibilities affecting cleanup of the Weapons Complex.

As presently organized, the cleanup lacks a credible and reliable approach to identify and reduce potential public health risks and to effectively address community concerns about health impacts. The absence of a coherent strategy for evaluating

potential off-site human exposure to Weapons Complex waste and contamination, or for understanding the possible health effects of such exposure, will make it difficult to establish health-based cleanup priorities. Failure to address health concerns in a comprehensive, scientifically rigorous, and open manner may erode public support for the cleanup.

A fundamental problem underlying present cleanup efforts is a lack of credibility that stems from past failures by DOE and its predecessor agencies to deal effectively with environmental contamination and to make full public disclosure regarding the impacts of those failures. DOE's efforts to achieve credibility may be hindered by the continuing lack of effective public involvement in waste management and environmental restoration decisions, and by its self-regulatory role in many activities pertaining to radioactive waste.

For these reasons, the Office of Technology Assessment (OTA) finds that prospects for effective cleanup of the Weapons Complex in the next several decades are poor and that significant policy initiatives are required if those prospects are to be improved. The objectives of such initiatives should include the following:

1. improving the performance and coordination of DOE and other Federal and State government entities involved in conducting or regulating waste management and environmental restoration activities;
2. conducting human exposure assessments and other health studies that would provide a scientifically sound basis for establishing immediate remediation and information needs and establishing processes to address the specific health concerns of communities around the weapons sites;
3. enhancing the credibility and public acceptability of the decisionmaking processes for waste cleanup at each site; and
4. eliminating self-regulation by DOE over radioactive waste management.

OTA believes that the policy initiatives outlined below could help meet the objectives and improve cleanup prospects.

POLICY INITIATIVES

The following policy initiatives could enhance current cleanup prospects by improving the decisionmaking processes, performance, and credibility of responsible agencies:

- I. Increase congressional oversight of environmental restoration and waste management activities that require improved performance by the responsible agencies.
- II. Enhance the structure and process for assessing potential public health impacts from Weapons Complex waste and contamination in order to evaluate the possibility of off-site health effects, develop health-based priorities, and address community health concerns.
- III. Develop a structure and process to provide public participation in key cleanup policy and technical decisions in order to enhance the credibility and quality of those decisions.
- IV. Establish a national mechanism to provide outside regulation of DOE radioactive waste management programs in order to enhance the effectiveness and credibility of those programs.

The following discussion explains the rationale for these policy initiatives and evaluates some possible approaches to implementing them.

I. Increase Congressional Oversight of Environmental Restoration and Waste Management Activities That Require Improved Performance by the Responsible Agencies

Congress could increase its oversight of DOE and other Federal agencies to ensure that the agencies implement existing legislative authority to effectively conduct and properly coordinate activities relating to waste management and environmental restoration activities.

Congressional oversight could usefully be directed toward encouraging agencies to improve their performance in the following areas, which could benefit from prompt attention:

1. strengthen agency personnel,
2. plan for safe waste storage,

3. improve technological development processes,
4. increase public access to information,
5. coordinate and accelerate standard-setting, and
6. strengthen site monitoring programs.

1. Strengthen the Personnel of Involved Agencies To Conduct Waste Management and Environmental Restoration Programs

DOE has begun to address contamination problems due to past releases of waste at Weapons Complex sites. Activities to date include restructuring relevant parts of the Department, preparing a Five-Year Plan that includes environmental restoration and technological development programs, and negotiating agreements with the Environmental Protection Agency (EPA) and the relevant States pursuant to regulatory requirements under the Resource Conservation and Recovery Act (RCRA) and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). However, actual characterization of sites is just beginning, and hardly any remediation has been accomplished.

A major problem highlighted by DOE in the 1990 Five-Year Plan is a serious shortage of qualified personnel in DOE, EPA, and other involved Federal and State agencies required to manage and carry out waste management and environmental restoration programs. Some environmental restoration projects and activities will involve judgment, talent, and expertise currently in very short supply.

The skills involved in weapons production do not encompass all of the multidisciplinary expertise necessary for dealing with environmental restoration problems or properly supervising contractors that conduct the cleanup. DOE will need to retrain many existing personnel. In addition, DOE and the Federal and State regulatory agencies must recruit and train significant numbers of outside personnel with the necessary skills to accomplish the goals of environmental restoration in a timely manner. Specific plans are necessary to begin developing dedicated, technically proficient managers and teams that can work effectively and cooperatively throughout the waste management and environmental restoration process.¹

To that end, DOE, EPA, and other involved Federal agencies, in cooperation with the States,

¹Congress has recently enacted a program to strengthen national defense science and engineering education. See National Defense Authorization Act for FY 1991, (the "Act") Pub. L. No. 101-510, §247 (1990); H.R. Rep. No. 101-923, 101st Cong., 2d Sess., at 38 (1990).

could prepare a coordinated plan that identifies personnel needs for the cleanup program and outlines a process for developing the cadre of professionals required in these areas.²

2. Plan for Safe Storage of Waste

For many years, DOE has been developing plans and programs to dispose of the stored high-level waste (HLW) and transuranic (TRU) waste at weapons sites. Some of the facilities that are key to those programs—such as the Waste Isolation Pilot Plant (WIPP) in New Mexico and the vitrification plant at Savannah River—have been constructed. However, many of the assumptions underlying DOE's waste management plans have now changed. For example, repository delays have affected key aspects of DOE strategy for the disposal of high-level and transuranic waste. Also, regulations for storing mixed waste require changes in some of DOE's earlier plans.

These and related developments require that more attention be devoted to storing waste safely on-site for a longer period of time. The potential release of toxic materials from all types of waste stored on-site for long periods should be monitored, evaluated, and prevented. DOE is just beginning to consider the implications of these longer on-site storage requirements.

High-level waste is now expected to remain on-site for more than 20 years (in tanks or, later, as glass logs). An important issue is whether the planned vitrification operations at Savannah River and Hanford will result in a waste storage system that will meet all requirements for long-term safe operation should the opening of the planned deep geologic repository continue to be delayed.

Also at issue is whether vitrification will proceed at a pace adequate to prevent or reduce the adverse impacts of HLW tank storage at the weapons sites. A related issue is whether the capacity and integrity of certain tanks are adequate to store additional liquid waste generated during the production of new weapons materials or the processing of old ones pending vitrification of existing tank waste. A more pressing and specific concern is whether the poten-

tial explosion hazard of the Hanford tanks can be satisfactorily dealt with until the vitrification facility at Hanford becomes available (10 years or more in the future).³

An issue with respect to transuranic waste is whether it can continue to be stored at current facilities and in some of the older drums for the years required until WIPP is operational. There may be technical and regulatory limits on how long the waste can be stored safely in its current form. This suggests the need to investigate further whether a portion of that waste should be repackaged, treated, or stabilized in some way while it awaits transportation to, and disposal at, WIPP.

In addition, regulatory and technical issues relating to mixed waste at the weapons facilities may not be resolved for some time. Unfortunately, there seems to be no quick or easy solution to this problem because the mixed waste must remain in controlled storage until it has been fully characterized, adequate treatment capacity has been designed and built, and proper operating permits have been obtained from EPA or the States. Without construction of additional treatment capacity, DOE's future storage capability may have to be increased.

To enhance prospects for safe on-site storage of waste, DOE could prepare a detailed plan for long-term storage of high-level and transuranic waste and for storing and treating mixed waste.

3. Improve Technological Development Processes

The capability of existing technologies to clean up or even contain Weapons Complex contamination is uncertain. For some problems, no proven technologies exist at all. Developing more effective technologies for remediation, or even containment, will be a slow and difficult process. For all practical purposes, that process is just beginning.

The availability of effective technologies, when needed, for interim as well as long-term remediation depends on whether DOE can establish a technological development process focused on solving the most immediate, intractable problems hindering

²Section 3135 of the Act directs the Secretary of Energy to develop a comprehensive 5-Year plan for the management of environmental restoration and waste management activities at DOE facilities, including a description of management capabilities and resources to carry out the plan, and submit a report to Congress on this management plan by June 1, 1991. (See *supra* note 1, at 262).

³Section 3137 of the Act directs the Secretary of Energy to report to Congress on actions taken to promote the safety of these tanks and the timetable for resolving outstanding issues on how to handle the waste in such tanks. (See *supra* note 1, at 363)

effective cleanup. DOE has created an Office of Technology Development to conduct research pertinent to the Weapons Complex cleanup. The present challenge for DOE, EPA, and the States is to improve the slow rate of introduction of new technology that has prevailed over the past decade and to adequately test the effectiveness of available technologies. New technologies must meet existing or anticipated cleanup standards, must focus on reducing public health and environmental risks, and must be developed in a process involving the public.

The procedure for developing and implementing more effective technologies could be improved by more open analysis of the requirements and alternative solutions for the most important cleanup problems. More focused and long-term support should then be devoted to testing and evaluating the most promising technologies identified. EPA and the States may need increased support to participate in the technology testing and evaluation process.

In addition, the technological development process must be driven by cleanup needs rather than by the skills of the current work force or the traditional expertise within the DOE national laboratories. Careful decisions should also be made regarding when—and under what circumstances—it would be beneficial to involve the private sector in the development, testing, and implementation of technology. If the large investment of effort and funding now planned for technological development can be focused on the most critical problems requiring technical solutions, the likelihood increases that such an investment will be worthwhile.⁴

To achieve these objectives, DOE could accelerate efforts to structure a program clearly identifying immediate technological needs and to develop timely solutions to address the more urgent contamination problems.

4. Increase Public Access to Information

Public dissatisfaction stemming from past events at the Weapons Complex may limit what can be accomplished in the cleanup. In particular, the distrust of DOE (and, to a lesser extent, of other involved agencies) by many affected and interested parties pervades much of the discussion of cleanup issues. That distrust results largely from the failure

of DOE, or predecessor agencies, to responsibly manage weapons waste. It also stems from DOE's failure to disclose information relevant to safety, health, or other impacts of Weapons Complex operations and from a mode of classifying information that shielded DOE's problems in environmental, health, and safety areas from outside scrutiny. Many affected and interested parties are thus skeptical about the accuracy and reliability of DOE's statements regarding the cleanup.

DOE has made some efforts to overcome this public image, and initiatives at the very top of the organization to change the Department's past "culture" are cited as evidence of its change in attitude. Although these positive developments may improve future prospects to some extent, they are probably insufficient to overcome the lack of credibility that still attaches to many DOE efforts. These efforts also continue to be hindered by the slow process through which information relevant to waste management or environmental restoration is separated from classified information and made available to the public.

DOE should open its cleanup activities to full public scrutiny and aggressively expand its effort to inform the public about waste management and environmental restoration activities. As a first step toward this end, Congress could direct DOE to institute new procedures to provide the public with all information relevant to waste management and environmental activities, including all documents and reports dealing with past releases of contaminants to the environment, especially at the site-specific community level.

To increase public access to information, DOE could accelerate its declassification efforts relevant to waste management and environmental restoration. DOE could also institute improved procedures to make requested material available promptly and to continually update mailing lists for the purpose of notifying interested parties of meetings, hearings, comment periods, and the availability of new materials.

5. Coordinate and Accelerate Standard-Setting

Adequate standards, especially those for radioactive soils and sediments and mixed waste, are not being developed in a coordinated and timely man-

⁴Sections 1801-03 of the Act establish the "Strategic Environmental Research and Development Program," to provide support for basic and applied research and development of technologies that can enhance the capabilities of DOE (and the Department of Defense) to address environmental concerns, including environmental restoration. (See *supra* note 1, at 277)

ner. Regulations governing the allowable amounts of radionuclides in soil have yet to be developed, and prospects are dim that such regulations will be available soon. In addition, important elements of EPA's radiation protection standards for the disposal of high-level and transuranic waste are undergoing revision, and when they will be available for public comment is unknown. Mixed waste standards have been developed principally for the hazardous component of that waste, with little coordination between EPA's hazardous and radioactive waste specialists or between EPA and other agencies. Expertise for different aspects of standards is scattered throughout the Federal Government.

To improve and accelerate the standard-setting process as it applies to the Weapons Complex, DOE, EPA, and other involved agencies could establish more effective coordination mechanisms among and within agencies and assign appropriate personnel to set, apply, and enforce health-based standards incorporating current information about the public health impacts of both radioactive and hazardous waste.

6. Strengthen Site Monitoring Programs

Hundreds of waste management units within each of the weapons sites contain complicated mixtures of radioactive and hazardous contaminants. The contamination is very site-specific, and major uncertainties exist about its nature, location, and impact. The enormous amounts of contaminated soil and water are especially difficult and time-consuming to assess and remediate with existing technologies.

Although a few technologies to prevent contamination from migrating are being used (e.g., capping soils or pumping and treating contaminated groundwater), long-term monitoring is necessary to ensure containment. Long-term operation of some groundwater "pump and treat" measures will be necessary to reduce contaminants to desired levels.

Current prospects for DOE's environmental restoration efforts indicate that much of the existing contamination at weapons sites will remain unremediated for decades. Among the environmental restoration decisions to be made is whether contaminated soil, sediment, or buried waste should be exhumed and removed from specific weapons sites (and, if so, where it should be treated or placed) or whether it should be treated and contained and remain on-site. The risks and benefits associated with each of these

options should be evaluated with full public involvement.

Given current technical limitations, some contamination problems may not be cleaned up within the 30-year timeframe put forth by DOE, and other contamination problems may never be cleaned up fully. If some sites or portions of sites cannot be cleaned to the point of unrestricted use, institutional controls (including continuous monitoring and oversight, as well as notification and warnings) will be necessary to ensure that the public and the environment are not adversely affected.

To ensure that it deals effectively with uncertainties surrounding the environmental restoration process, DOE could strengthen its programs for monitoring and control of sites that may continue to have contamination.

II. Enhance the Structure and Process for Assessing Potential Public Health Impacts From Weapons Complex Waste and Contamination

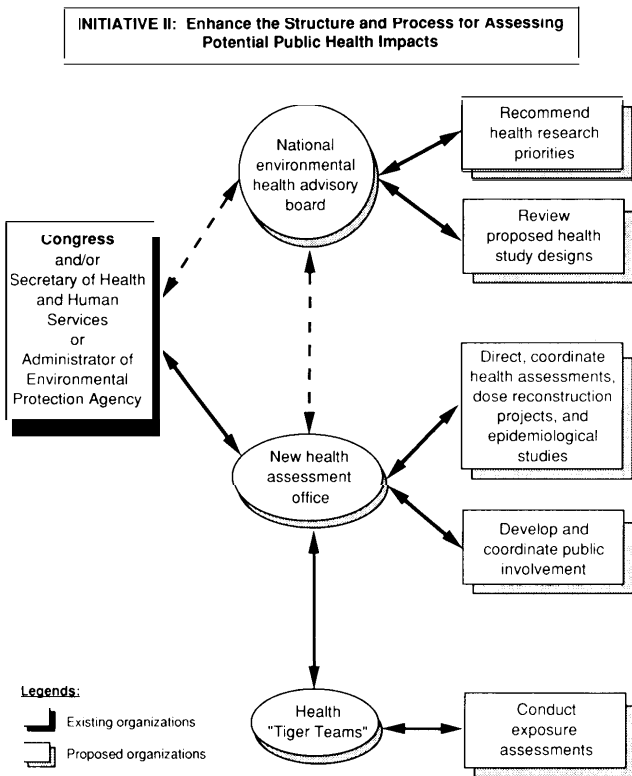
Congress could establish an institutional framework and process to effectively assess potential health impacts from the weapons facilities in order to evaluate the possibility of off-site health effects, develop health-based priorities, and address community health concerns.

This policy initiative could strengthen the assessment of potential off-site health impacts, improve the prospects that community concerns about possible off-site health effects are addressed, and provide a scientifically sound basis for developing health-based priorities. It could also help ensure that site-specific assessments provide a way to evaluate comprehensively the past, current, and potential public health impacts of contamination. A new structure and process could accelerate scientifically rigorous exposure assessments to determine the most urgent or significant health issues posed by the contaminants.

To implement this policy initiative, Congress could consider all or some of the following approaches (see figure 4-1):

1. Establish a new office to direct and coordinate Federal risk assessments, health assessments, State-organized health studies, and dose reconstruction projects.

Figure 4-I-Organizational Diagram for Initiative II



SOURCE: Office of Technology Assessment.

2. Establish a new program to conduct site-specific assessments of whether and where weapons site contaminants pose a threat of exposure to the surrounding communities.
3. Establish a national, independent environmental health advisory board to provide guidance regarding exposure assessments, health effects evaluations, and health research needs.
4. Require DOE to make all information pertinent to possible health impacts, including data on past environmental releases and current contaminants, generally available.

1. Establish a New Office To Direct and Coordinate Federal Risk Assessments, Health Assessments, State-Organized Health Studies, and Dose Reconstruction Projects

No one agency or organization has the necessary authority to assess overall health impacts from Weapons Complex waste and contamination. There is virtually no coordination of CERCLA risk assessments, Agency for Toxic Substances and Disease Registry (ATSDR) health assessments, State-organized health studies, or dose reconstruction

projects within or among the sites. Although DOE's recently established Office of Epidemiology and Health would, among other responsibilities, conduct community health studies, the focus and scope of such studies are unclear. Even if funding and additional personnel slots are approved, it is uncertain whether DOE can successfully recruit the required staff in the near future. Also, any community health study designed, conducted, or supervised by DOE is unlikely to achieve public acceptance.

To improve the present structure and process, Congress could establish a new health assessment office to direct and coordinate comprehensive health assessments at Weapons Complex facilities and to coordinate with DOE, EPA, the Department of Health and Human Services (HHS), and State health departments on all matters of potential public health impacts from these facilities. The new office could also develop and implement a process for identifying community concerns about potential public health impacts and for obtaining broad public involvement in these assessments.

The first task of the new office should be to establish teams of environmental health experts (the health "Tiger Teams" described below) from government agencies, universities, and the private sector, to design and direct human exposure assessments at each of the weapons sites. The new office would be responsible for initiating and directing additional health studies, including dose reconstruction projects, based on the exposure assessment findings. These health studies could be designed and conducted by government staff or by scientists from universities and the private sector.

This approach addresses some of the deficiencies in the current structure and process of health assessments conducted by ATSDR and the States. For example, ATSDR is a small, understaffed agency, whose funds for conducting currently required health assessments at the Weapons Complex come from DOE, with whom it must negotiate an agreement before an assessment can begin at any particular site. Because of its current limited resources, ATSDR health assessments are likely to be too cursory to determine the existence or severity of health risks posed by contamination, to provide a comprehensive baseline evaluation of current and potential public health effects, or even to identify areas in which more elaborate studies are required. State-sponsored site-specific health studies will vary

considerably in comprehensiveness and sophistication. Not all interagency agreements incorporate funding for State-organized health studies. Also, although some States are planning to evaluate potential health effects at specific weapons sites, sufficient Federal funds may not be available to carry out such plans. Although anew Federal office might be viewed initially as impinging on State autonomy in health issues, it could ultimately help the States make more effective use of their resources by eliminating duplication and facilitating coordination among involved agencies.

By establishing a mechanism to direct and coordinate the various site-specific health studies, this initiative could strengthen the current approach to health effects evaluations. This would ensure that important questions about possible off-site health impacts of weapons site contamination are addressed, that research designs are adequate to the many methodological challenges faced by environmental health studies, and that the multidisciplinary talent in environmental health available in government agencies, academia, and the private sector is effectively utilized. It could also help achieve timely and effective resolution of urgent or sensitive public policy issues.

The new office can perform these functions most effectively if it is adequately staffed and has sufficient independence. The new office could be established within HHS, possibly as a new and separate office within the Agency for Toxic Substances and Disease Registry, or as an independent center within the Centers for Disease Control. The office could report directly to the Secretary of HHS and to Congress. Alternatively, the office could be established within EPA and report directly to the EPA Administrator and to Congress. Or, the new office could be established as a separate entity outside of any existing agency, and report directly to Congress.

The new office should be given the time and resources to secure competent leadership and the necessary expertise to succeed and to be accepted by concerned communities. Giving the new office independent authority and funding would eliminate the need to use scarce personnel time to negotiate MOUs (memoranda of understanding) and funding levels with DOE operations offices and thus avoid delays in initiating health studies. If the new office is given the resources to function well, it could help

ensure that site-specific health evaluations conducted at each site are comprehensive, scientifically sound, and credible to local communities. The office could also help avoid duplication of effort by different health agencies and encourage more efficient use of health experts or other scarce resources. In addition, it could provide an institutional memory for health-related lessons learned as the cleanup progresses.

There are important advantages to establishing an identifiable institutional focal point for weapons site health evaluations. By enhancing coordination and cooperation, the new office could promote a more efficient use of resources and scientific talent. By providing an opportunity for input from all segments of the environmental health professional community, the new office could ensure that the most effective research designs are used. By establishing consistent policies for community involvement in all stages of the health assessment process and permitting early identification of community health concerns, the new office could enhance the credibility of the assessment process and more efficiently resolve the concerns of local communities. By determining which areas or sources of contamination may pose the greatest threat of off-site exposure, the new office could provide a sound and reliable basis for formulating health-based cleanup priorities. Finally, by reporting directly to Congress and having access to agency heads, the new office can achieve enhanced visibility and signal that health issues are receiving appropriate attention in the cleanup effort.

2. Establish a New Program To Conduct Off-Site Exposure Assessments

The proposed health assessment office described above could be required to establish health "Tiger Teams" to conduct rigorous, comprehensive health assessments of the potential for human exposure to current waste and contamination at each site. Recruiting personnel for health Tiger Teams from the limited pool of available experts who can do this work may take some time, so the effort should begin as soon as possible. Team members could be drawn from government agencies as well as from universities and the private sector. Teams could have a duration of 3 to 5 years and might be organized in a manner similar to the Technical Steering Panel of the Hanford Environmental Dose Reconstruction Project (HEDRP). When constituted, the Tiger

Teams would require full and immediate access to weapons sites and all relevant data.

The health Tiger Teams could be directed to conduct several tiers of exposure assessments. Initial, first-cut assessments of any current contamination scenarios that might pose the risk of current or future human exposure could be made available in 6 to 12 months. If the teams discover situations that warrant immediate attention to protect public health, existing schedules, milestones, and finding priorities might have to be changed.

After the initial assessments, more refined studies could be performed as additional demographic and environmental monitoring data become available. Parallel with these efforts to assess the potential for exposure to current contaminants, separate exposure assessment teams could review source documents and historical emissions data to determine if further evaluation of historic releases or a formal dose reconstruction project is warranted.

Exposure assessments could better equip responsible agencies and the public with data that may be useful in developing and implementing health-based priorities in a timely manner. They could eventually provide a basis for developing a more workable, health-based priority system. Although health considerations are stated as top priority in the DOE Five-Year Plan, adequate data on potential health impacts are not available, nor does DOE have a strategy for acquiring or evaluating such data.

Exposure assessments conducted independently by health Tiger Teams could also guide Federal and State officials who negotiate interagency agreements in choosing among alternative schedules allowed under current laws and regulations. The assessments can also focus on problem areas that require additional environmental characterization efforts or immediate attention through interim remediation measures. As additional exposure information is developed, parties can reevaluate schedules and milestones in that light.

3. Establish a National, Independent Environmental Health Advisory Board To Provide Guidance Regarding Exposure Assessments, Health Effects Evaluations, and Health Research Needs

A national independent advisory board could be established to provide advice and guidance with regard to health assessments and studies relating to

the Weapons Complex. The board could be composed of experienced environmental health scientists and report to Congress and to the Secretary of HHS or the Administrator of EPA. The board could provide guidance regarding the methodology and design of exposure assessments and health effects evaluations. It could also provide advice on health research needs related to the cleanup. As one of its first tasks, the national board could review plans submitted by the health Tiger Teams for conducting exposure assessments.

Although it maybe difficult for part-time advisers to grapple with the scope and complexity of weapons site issues, a prestigious national advisory board could still provide invaluable guidance and advice to decisionmakers. With its state-of-the-art environmental health knowledge and expertise, an independent, nongovernmental body could provide a structure for recognizing and coordinating health research needs, study designs, and strategies, and thereby advance the science of environmental health as it relates to problems posed by the Weapons Complex. The board could also provide advice and recommendations about the use of health assessment results to establish both short- and long-term health-based cleanup priorities.

4. Require DOE 10 Make Health Impact Information Generally Available

Congress could require DOE to make all data relevant to health impacts available to the scientific community without restriction or limitation. This would encompass data concerning past emissions and environmental releases, including previously classified data on these matters. In addition, Congress could require that the same information be made available to the general public.

At present, there are no clear requirements to ensure that health agencies such as ATSDR or State departments of health have access to DOE records relating to possible health impacts or to historical releases of radioactivity. Yet access to these records is important in understanding and assessing the potential impacts of existing contamination. Also, public perception of the scientific and political objectivity of health studies will be a major factor in its acceptance of reported findings or recommended actions. In the wake of growing indications that DOE failed to disclose past actions that endangered public health and withheld information on the adverse health effects of those actions, statements by

DOE or other government agencies on the health effects of current waste and contamination are likely to be suspect. Without full disclosure of information relating to health, including information on past releases, the public will likely have little confidence in the reliability of current or future health studies.

This initiative could involve additional resource requirements for DOE. Staff will be required to collect historical records and review them for national security implications prior to declassification. In addition, appropriate measures may have to be taken to minimize opportunities for misinterpretation. The investment of resources in this effort is important, however, if community concerns about health impacts are to be addressed. A community that has already experienced exposure may be at greater risk from current pollution than a community with no previous exposure. Until all information pertinent to total contamination exposure burdens on the population around sites is available, no reliable estimates can be made of relative health threats within and among sites. Release of this information should also bolster DOE's credibility and demonstrate its commitment to the "new culture" and to the protection of public health and the environment.

III. Develop a Structure and Process To Provide Public Participation in Key Cleanup Policy and Technical Decisions

Congress could establish at each site and at the national level an independent public advisory board to provide policy and technical advice with respect to key cleanup decisions and require the agencies involved to consider such input in order to enhance the credibility and quality of those decisions.

Despite efforts at cooperation by many of the involved parties—including environmental organizations, affected communities, the States, EPA, the present Secretary of Energy, and DOE officials concerned with the cleanup—the current process is inadequate to deal effectively with issues such as site characterization and remediation, cleanup priorities, or technological development. Further, it will be extremely difficult, and perhaps impossible, to dispel the legacy of distrust of DOE in time to foster the cooperative, consensual approach required if real progress is to be made in cleaning up the weapons plants. There is thus an overriding need for a decisionmaking process—acceptable to all inter-

ested parties—through which public concerns can be addressed and resolved. Without such a process, large sums of public funds could be spent on activities that will not gain public acceptance or advance any important aspects of the cleanup.

By taking this policy initiative, Congress could supply the means to involve the public much more effectively in cleanup decisions. By encouraging independent input to the policy and technical aspects of those decisions at the site-specific level, this initiative could broaden the policy and technical review of cleanup efforts and foster a decisionmaking process that is open to scrutiny and credible to affected communities and to the general public. This is particularly important in light of the lack of credibility resulting from several decades of Weapons Complex operation pervaded by secrecy about, and apparent indifference to, potential health and safety impacts on workers and the public, and a persistent lack of willingness to comply with some applicable laws and regulations.

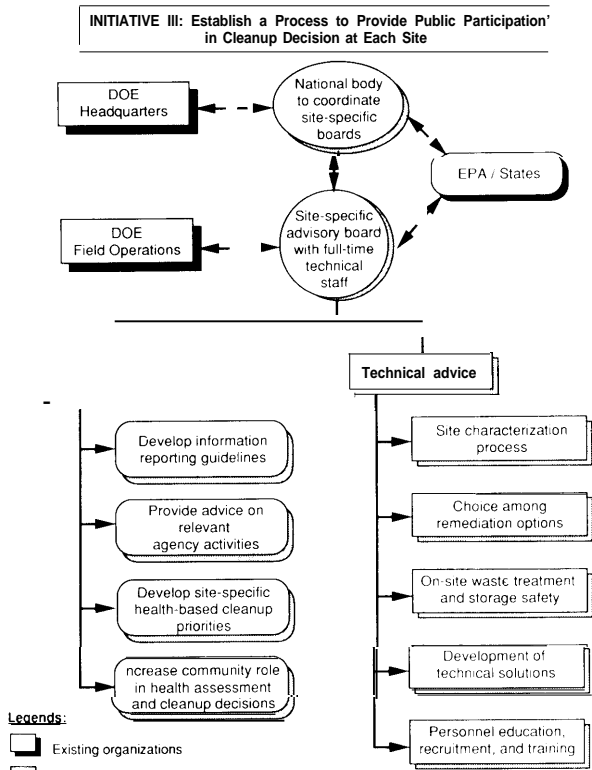
This policy initiative could help develop a meaningful role for affected communities and the general public in setting and implementing cleanup objectives and health-based funding priorities and could provide a process for involving the public in the development of site-specific environmental restoration priorities based on the results of health assessments by competent and independent bodies.

To implement this policy initiative, Congress could (see figure 4-2):

1. Establish advisory boards with full-time technical staff at each site to provide both policy and technical advice to DOE, EPA, and other involved Federal and State agencies.
2. Establish a national board to coordinate site-specific boards and provide advice to the headquarters level of involved Federal agencies.
3. Require DOE and other involved agencies to consult with the boards prior to making key decisions and report to the boards the manner in which their advice has been incorporated into those decisions.

The boards could provide a mechanism for helping to resolve fundamental policy and technical issues that continue to arise with respect to cleaning up past contamination, assessing and reducing public health risks, and safely storing and disposing

Figure 4-2--Organizational Diagram for Initiative III



SOURCE: Office of Technology Assessment.

of past waste. By having access to the information, technical support, and other resources needed to participate effectively in key aspects of the cleanup, the boards could foster a process characterized by an openness, trust, and cooperation among interested parties that is not being achieved at present.

1. Establish Advisory Boards With Full-Time Technical Staff at Each Site

Congress could establish a board with full-time technical staff for each site (or group of sites in close proximity) in the Weapons Complex. These site-specific boards could provide policy and technical advice and guidance regarding key aspects of environmental restoration and related public health assessment to the responsible agencies and also recommend measures for expanding public involvement in these activities and in developing cleanup priorities.

The boards could be composed primarily of residents of the communities or regions in which a particular site is located. The size of the boards should be limited to promote efficiency and encour-

age participation. Board members could include representatives of community and environmental groups and Indian Nations in the area, as well as experts in relevant subjects, who would serve on either a full- or a part-time basis compatible with their occupations.

Board members could be chosen by, and report to, the Governors and Members of Congress from the respective States in which the sites are located. In addition, the boards could provide their advice and recommendations to the chief executive officers of DOE, EPA, HHS, and other involved Federal or State agencies. Advice could also be provided to the chief officer of the relevant regional entity (e.g., the head of the DOE Operations Office responsible for the site, the head of the EPA region in which the site is located, the head of the ATSDR division responsible for health assessments at the site, and heads of relevant State agencies).

The boards could be authorized to develop guidelines for relevant information to be reported to them by all involved agencies (including DOE, EPA, and ATSDR) and to require the agencies to provide information consistent with those guidelines. This authority would enable the boards to maintain continuing awareness of the relevant activities and upcoming decisions of these agencies.

The site-specific boards could provide policy and technical advice and guidance regarding key cleanup decisions, including, for example, those arising in connection with the conduct of site characterization; the choice among remediation options; the safe operation of waste treatment and storage conditions on site; the focus of technological development programs relevant to the site; the design and conduct of site-specific health assessments; the permitting of treatment, storage and disposal facilities; the development of interagency agreements; the application of ARARs (applicable or relevant and appropriate requirements) to the contaminated sites; and the preparation of National Environmental Policy Act documentation. Each board could also review the education, recruitment, training, and personnel needs of all involved Federal and State agencies and recommend measures for obtaining the professionals required at that site.

The boards could also help develop mechanisms for increasing the role of affected communities in the decisionmaking processes of involved agencies with respect to cleanup priorities at a particular site. To

encourage development of a useful and acceptable priority-setting system for each site, Congress could direct DOE and other involved agencies to work with the boards to develop cleanup priorities that address community concerns and incorporate the results of off-site health assessments at the respective sites. The boards could thus play a key role in developing, with broad community input, site-specific, health-based cleanup priorities.

Establishing the boards should not delay the cleanup process. Progress on that work, which is at a very early stage, need not be interrupted while site-specific boards are established and the boards' activities could be conducted in parallel with the agency decisionmaking process. Any additional time the agencies might require to consider input from these boards prior to making decisions could well save time that could be wasted in future confrontations if decisions are made and priorities set without meaningful public involvement.

The funding required to establish and maintain the boards would constitute a relatively modest portion of total cleanup expenditures. In fact, if the process is acceptable to the public and directs resources toward publicly acceptable decisions and priorities, cost savings could be realized.

2. Establish a National Board To Coordinate Site-Specific Boards and Provide Advice on National-Level Issues

In addition to site-specific boards, Congress could establish a national board to coordinate the site-specific boards and to provide advice and guidance regarding policy or technical issues affecting several Weapons Complex sites or the complex as a whole.

Designated persons from each site-specific board and other experts could constitute a national board that would meet periodically to coordinate the activities of site-specific boards and provide advice and guidance on matters that apply to more than one site, and on the national aspects of issues considered by site-specific boards, including technological development, personnel needs, and public involvement. The national board could also recommend health-based cleanup priorities across the Weapons Complex. The national board could prepare an annual report to Congress and the Secretary of Energy, integrating the advice and recommendations of the site-specific boards, drawing any relevant national implications, and making recommen-

dations applicable to the Weapons Complex as a whole.

3. Require DOE and Other Involved Agencies To Consult the Boards Prior to Making Key Decisions and To Report Those Decisions to the Boards

To ensure that each board's input is duly considered by DOE and other involved Federal and State agencies, Congress could require those agencies to consult with the appropriate board on a regular basis prior to making key decisions and then to inform that board how its advice and recommendations were taken into account in arriving at the decision. Congress could either establish this requirement and direct agencies to comply or authorize the boards themselves to develop and enforce the requirement. The frequency of consultation could be specified in advance either by Congress or by the boards, or the boards could determine periodically what specific decisions they wish to consider.

Establishing strong public advisory mechanisms at the site-specific and national levels and requiring the agencies to consider, respond to, and incorporate such input in their decisionmaking processes might conceivably slow down some activities. Also, even with extensive public involvement, consensus on outcomes may not be easy to achieve. However, incorporating meaningful public participation into the cleanup process is a worthy goal in and of itself because credibility is required in that effort. Making cleanup decisions through a process that is open and acceptable to the public can go a long way toward achieving sound and credible outcomes.

IV. Establish a National Mechanism To Provide Outside Regulation of DOE Radioactive Waste Management Programs

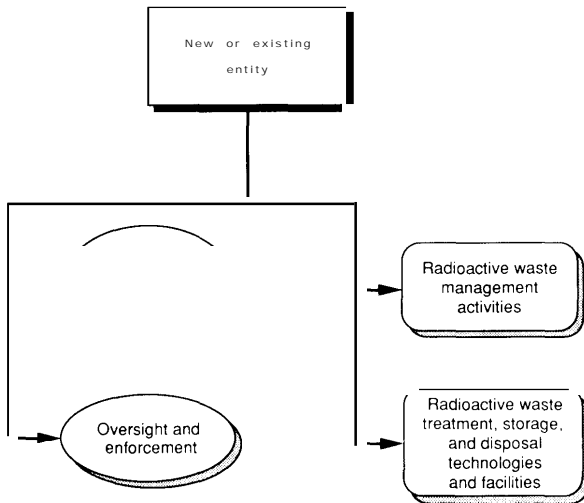
Congress could authorize an institution other than DOE to regulate those aspects of radioactive waste management activities now subject to DOE authority, and over which no other agency has authority, in order to enhance the credibility and effectiveness of those programs.

To implement this policy initiative, Congress could consider one of the following organizational options (see figure 4-3):


- Establish a permanent, full-time, independent national commission and give it regulatory and enforcement authority with respect to radioac-

Figure 4-3-Organizational Diagram for Initiative IV

INITIATIVE IV: Establish a National Mechanism to Provide Regulation of DOE's Radioactive Waste Management Programs



Legends:

 Proposed functions

SOURCE: Office of Technology Assessment.

tive waste management activities at the Weapons Complex.

- Authorize an existing body to exercise those functions.

By limiting DOE self-regulation and providing appropriate independent regulation of radioactive waste management at the Weapons Complex, Congress could provide a credible and effective mechanism for addressing the issues, problems, and prospective solutions related to the safe treatment, storage, and disposal of existing and future radioactive waste.

To implement this policy initiative, Congress could require the new commission or existing body to:

- Promulgate rules and regulations, pursuant to “notice and comment” and other relevant procedures of the Administrative Procedure Act,⁵ applicable to radioactive waste management at DOE weapons facilities (including

treatment, storage, and disposal of such waste) and governing the release of radionuclides.

- Enforce DOE compliance with promulgated rules and regulations.

Areas subject to such regulation could include vitrification and subsequent interim storage of high-level waste; immobilization and disposal of “low-level” waste from HLW tanks; storage, treatment, and disposal of TRU waste; and other high-level, transuranic, and mixed waste treatment or storage facilities. When promulgated, the rules and regulations would supersede any conflicting DOE orders or guidelines.

Under existing law, DOE regulates its own activities relating to certain aspects of the treatment, storage, and disposal of radioactive waste through orders (currently unmodified) that are not promulgated through “notice and comment” or other procedures set forth in the Administrative Procedure Act. These include many elements of the high-level and transuranic waste management programs for radioactive materials, on-site storage of radioactive materials, and various decisions concerning WIPP.

DOE has exclusive jurisdiction over radioactive waste storage practices at the Weapons Complex. With respect to mixed waste, even after the hazardous component is treated to levels specified by EPA, the management of any remaining radioactive components is still under the purview of DOE. An independent regulatory process could help ensure that on-site storage and disposal facilities are protective of human health and the environment and could thus increase public confidence in the absence of potential harmful releases from these facilities.

Also, under present practices, there is little or no independent monitoring or certification of certain aspects of DOE’s high-level or transuranic waste programs. For example, DOE has sponsored all the evaluations of the integrity of the waste form produced through processes such as vitrification. Independent monitoring and external oversight of DOE waste management efforts would supplement the requirements of existing regulations and could enhance public credibility of DOE’s efforts.

As proposed, the regulatory and enforcement functions would complement, but not supersede, the authority of EPA under existing laws and regula-

⁵ 5 U.S.C.A. §§551-576, 701-703, 3105, 3344 (West 1977 and Supp. 1990).

tions over the treatment, storage, and disposal of the hazardous component of mixed waste at the Weapons Complex. Assignment of these functions to an agency other than DOE would, however, supersede much of DOE's exclusive authority under the Atomic Energy Act to regulate certain aspects of radioactive waste management. Transferring these regulatory and enforcement functions over radioactive waste management at the Weapons Complex to a body other than DOE would help address the deficiencies in the present system, particularly the credibility issues associated with current DOE self-regulation.

Congress Could Choose Among the Following Organizational Options

Establish a New Commission—Congress could establish a permanent, full-time, independent national commission with regulatory and enforcement authority with respect to radioactive waste management activities at the Weapons Complex. Membership of the commission could include persons with expertise in technical, scientific, and other relevant fields to be appointed by the President upon nomination by Members of Congress, with input from Governors of affected States, leaders of Indian Nations in affected regions, and national and regional environmental organizations.

Establishment of a new body would obviously require startup time and new funding. Time would be needed to recruit both the members and the staff of such a commission, who in turn would need time to establish their organization and procedures, and to review regulatory and technical information relating to the Weapons Complex that is relevant to their functions. On the other hand, a new entity to deal solely with the above-mentioned functions could perhaps focus more immediately and exclusively on providing the best regulatory and technical input to the current process than an existing body with other responsibilities.

Assign the Functions to an Existing Body—Congress could authorize an existing body to exercise regulatory and enforcement responsibilities for radioactive waste management.

Assigning these functions to an existing body would avoid the time and costs involved in establishing a new organization and would draw upon existing organizational structures, capabilities, and skills. Additional staff and resources may have to be

provided, however, to assist in carrying out new responsibilities. Although some startup time and additional costs would be necessary in connection with this option, the decisionmaking structure, and the institutional structure within which staff could be expanded, are already in place and might thus more quickly gear up to take on the additional functions. However, the viewpoints of constituencies or critics of any existing organization would have to be taken into account in considering this option. Existing modes of operation and relationships within the organization, with other Federal and State agencies, and with outside interested parties could affect the timeliness and effectiveness with which new responsibilities are carried out.

One body whose authority could appropriately be expanded to assume these types of responsibilities is the Nuclear Regulatory Commission (NRC). In addition to its regulatory and licensing authority over commercial nuclear power facilities, NRC is responsible for developing and implementing regulations to ensure public health and safety for storage of high-level radioactive waste (except for waste at the DOE Weapons Complex) and for final isolation of high-level radioactive waste and waste created in the mining of uranium ore. As such, it has extensive regulatory and licensing experience and technical capability. However, it would be necessary to address any new interagency coordination problem that may result if NRC were given authority over the radioactive portion of mixed waste while EPA retains jurisdiction over the hazardous portion.

Another agency whose authority could be expanded to cover these responsibilities is EPA. Because EPA already has regulatory authority over the hazardous portion of mixed waste, there may be advantages in extending this authority to radioactive waste as well. In this way the sometimes difficult task of regulatory coordination between two agencies with split authority over the same waste could be avoided. EPA would need to add expertise in the radioactive waste area and make organizational changes to provide adequate technical and regulatory capabilities in this area. Therefore, startup time and new resources would be necessary.

Another possibility is the Defense Nuclear Facilities Safety Board (DNFSB), which already has the Weapons Complex under its purview for different purposes. The DNFSB was established by Congress to provide independent oversight regarding the

safety of nuclear facilities and operation at the Weapons Complex. The Board, as presently constituted, functions as an advisory panel and has limited regulatory authority. The Board would also require additional staff and resources to carry out its new responsibilities.

CONCLUSION

Progress in cleaning up the waste and contamination at the Weapons Complex is being hampered by a paucity of data and qualified personnel, inadequate efforts to assess possible off-site health impacts, lack of ready technical solutions, and public skepticism about government agency decisions and activities relating to waste management and environmental restoration. The policy initiatives outlined above are aimed at improving and strengthening the decision-making process for setting and meeting cleanup objectives.

Increased congressional oversight could improve prospects for enhancing the agency infrastructure, accelerating standard-setting, and providing more effective approaches to site characterization and

remediation, waste storage and disposal, technological development, priority setting, and other aspects of the cleanup. The direction and coordination of site-specific health assessments by an independent and authoritative entity could improve prospects for achieving scientifically sound and credible evaluations of possible off-site health impacts, resolving community health concerns, and developing health-based cleanup priorities. Establishing site-specific advisory bodies to provide independent policy and technical advice could improve prospects for open, credible, and cooperative decisionmaking on key aspects of the cleanup. Substituting independent regulatory authority for DOE's self-regulation in radioactive waste management activities could enhance the credibility and quality of waste management decisions.

Although the cleanup will be a long and difficult task, OTA's analyses indicate that the policy initiatives outlined in this report could significantly improve the prospects that sound and credible cleanup decisions will be made.