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Report to Congressional Requesters

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NUCLEAR HEALTH AND SAFETY

Need for Improved Responsiveness to Problems at DOE Sites

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GAO

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Resources, Community, and
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March 28, 1990

The Honorable Howard M. Metzenbaum
United States Senate

The Honorable George Miller
House of Representatives

On March 15, 1989, you requested that we summarize and evaluate the existing environmental, safety, and health (ES&H) problems at the Department of Energy's (DOE) contractor-operated facilities and sites throughout the country. These problems are so serious that they have at least temporarily shut down key facilities that affect the nation's ability to produce nuclear material for weapons.

GAO's work over the past several years has documented many of these problems, including safety questions regarding the operation of government production reactors, problems resulting from aging facilities, and ground water and soil contamination at sites.[1] Because of past mistakes—overemphasis on production, inattention in the environmental area, and complacency with regard to safety—DOE faces the immense task of cleaning up and modernizing its aging nuclear defense complex.

As agreed with your offices, this report summarizes DOE's and contractors' responsiveness to findings contained in DOE technical safety appraisals and environmental surveys. These appraisals and surveys have been done at DOE facilities and sites to identify the extent of the department's ES&H problems and prioritize them for corrective action. As further agreed, we also examined the extent to which DOE has developed a computerized tracking system to monitor the status of its ES&H problems.

Results in Brief

Since the mid 1980s, DOE has been conducting technical safety appraisals and environmental surveys in an attempt to identify the full extent of ES&H problems at DOE's contractor-operated sites and facilities. The environmental problems have proved to be particularly challenging, and DOE is still attempting to fully characterize them.

[1]See, for example, GAO's Views on Modernizing and Cleaning Up DOE's Nuclear Weapons Complex (GAO/T-RCED-89-9, Feb. 21, 1989).

DOE's computer data as of January 1990 show over 1,700 safety and health problems identified in technical safety appraisals and almost 1,300 environmental problems identified in environmental surveys. DOE has categorized these problems by level of seriousness, considering many to be a potential health and safety danger to employees and the public.

DOE's data show that the majority of the problems identified have not yet been corrected. DOE and its contractors have been slow to correct the health and safety problems, and there have been delays in developing corrective action plans to resolve the environmental problems. In addition, DOE's computer-assisted tracking system intended to monitor the problems does not contain some important ES&H data that would provide a more comprehensive picture of the problems DOE faces.

In regard to the health and safety problems identified in computerized records of DOE's technical safety appraisals, DOE and its contractors have resolved only 591 (34 percent) of 1,731 problems at its facilities. Further, only 46 (41 percent) of the 113 highest priority problems have been resolved. Some of the unresolved problems were identified as early as 1986 as needing immediate corrective action.

In regard to the environmental problems identified in DOE's environmental surveys, none are considered resolved by DOE. Many of these problems are complex and costly, requiring further analysis to fully define and long-term efforts to resolve. To address these problems, DOE and its contractors have completed corrective action plans at 28 of 37 sites surveyed. However, DOE and its contractors have been slow in developing and completing some of these plans and have in some cases not met established DOE milestones. Some uncompleted plans have been in process for over 2 years.

Finally, the computer system intended to track the problems does not contain some important information such as various field office and independent appraisals. DOE's computer system, if it included these appraisals, would provide a more complete picture of the problems at the sites.

Background

DOE conducts a wide variety of nuclear and non-nuclear energy related activities at many sites throughout the country.[2] Prior to 1985, ES&H issues at these sites were given limited attention by DOE management even though GAO and others were identifying various problems. In 1985, DOE began implementing a systematic program of technical safety appraisals and environmental surveys at DOE facilities to identify the extent of the department's ES&H problems and prioritize actions to correct them. To assist in ES&H management, DOE also began developing a computer tracking system to monitor the status of identified ES&H problems.

Technical safety appraisals and environmental surveys are conducted by teams of specialists under DOE management who file written reports of findings at individual sites and facilities. Technical safety appraisals identify safety and health problems that contractors are expected to act on and correct. Environmental surveys identify problems at individual sites as part of a department-wide effort to prioritize and address environmental problems. DOE considers the surveys to be mainly an effort to provide a baseline of information on the environmental problems rather than an audit of sites' compliance with environmental standards and laws.[3] The surveys identify problems that are often complex, requiring further definition through followup environmental sampling and analysis. On the basis of these appraisals and surveys, DOE and its contractors are required to develop and implement action plans to prioritize and correct the identified problems. DOE's office of safety compliance and division of environmental compliance are responsible for conducting followup monitoring to ensure that corrective actions are taken in a timely manner.

In 1986, DOE began developing a computerized tracking system to assist in monitoring progress in achieving safety and environmental compliance. The system is intended to provide DOE management with a more comprehensive picture of its ES&H problems and the status of progress toward solving them. The system is intended to allow users to retrieve

[2]Many of the more severe and costly problems are within DOE's nuclear weapons complex. The complex consists of 16 major sites around the country and produces nuclear materials such as plutonium and tritium for weapons. DOE weapons production facilities include national laboratories and production plants operated under DOE contract by private corporations or universities.

[3]DOE's facilities are subject to Environmental Protection Agency regulation and enforcement actions under several major environmental laws, including the Resource Conservation and Recovery Act of 1976, the Clean Water Act, and the Comprehensive Environmental Response, Compensation and Liability Act, known as Superfund.

and analyze a variety of information on appraisals, surveys, corrective actions, and other important ES&H-related matters.

Many Unresolved Safety and Health Problems Exist at DOE Sites

Since 1986, DOE has conducted 48 technical safety appraisals of facilities and operations at DOE sites. We reviewed computerized data from 40 of these appraisals (covering 18 sites) and found that they contained 1,731 safety and health problems. DOE has established three categories of seriousness for such problems. (See table II.2, app. II.) These problems are stated in the appraisals in the form of recommendations for corrective action. The identified problems relate to a wide variety of safety and health disciplines, including fire protection, emergency readiness, radiological protection, personnel protection, quality assurance, training, maintenance, and administration.

Inadequate radiological protection programs and procedures are a major deficiency throughout DOE. Approximately 18 percent of the 1,731 problems address this deficiency. For example, a 1988 appraisal at the Rocky Flats plant in Colorado found that air-monitoring and air-sampling capabilities to help ensure the health and safety of employees and the public were inadequate. According to DOE, the air-monitoring system at the plant did not adequately detect radiation at the facility. Similar problems were found at DOE's Y-12 nuclear plant in Tennessee and at other sites.

DOE has been slow to correct these safety and health problems. According to DOE data, only 591, or about 34 percent, of the 1,731 problems (recommendations) have been closed out. Moreover, many high priority recommendations made as long ago as 1986 remain open. Of 113 recommendations made in 1986 dealing with problems categorized by DOE as involving the greatest risk to employees and facilities, only 46 (41 percent) have been closed out. Of these 113, 10 were determined by DOE to require immediate corrective action, but five of these were still open as of February 1990. For example, in 1986 DOE recommended that the Y-12 plant more adequately protect against off-site radioactive contamination by better monitoring employees for contamination as they leave the facility. Although some corrective actions were taken by the contractor, a 1989 followup inspection found these actions to be incomplete. DOE has not since validated closure of the recommendation and still considers it to be open.

According to DOE, its data show a high percentage of technical safety appraisal recommendations open for a number of reasons. In some cases,

contractors may have completed the action but DOE has not yet verified completion, while in other cases DOE found the corrective actions taken to be inadequate. In some other cases, longer term actions have been started and partially funded but not yet completed. DOE officials also told us there have been delays in carrying out corrective actions in part due to the fact that DOE did not give a high priority to safety compliance followup. In this regard, DOE did not begin to devote more staff resources to the division of safety compliance until May 1988. More positions have since been allocated for safety followup, but DOE says it has had problems in filling these positions.

Many Unresolved Environmental Problems Exist at DOE Sites

Since 1985 DOE has conducted environmental surveys at 37 of its sites. The results of these surveys are considered preliminary because DOE is further evaluating the data gathered in the survey. In addition, DOE is continuing to further characterize the extent of its environmental problems at sites. Computerized DOE data on 31 of the environmental surveys show 1,277 environmental problems, or findings, in three categories of seriousness.[4] (See table II.4, app. II.)

All of these problems are considered by DOE to be unresolved. Many of the identified problems are complex, requiring further analysis to fully define. Costly, long-term planning and corrective actions will be needed to resolve them. Of the 1,277 findings, DOE categorizes about 15 percent as constituting a high risk for a threat to health. Problems identified included inadequate monitoring and control procedures related to hazardous materials at sites. Other serious problems included ground water and soil contamination from hazardous and/or radioactive materials.[5]

For example, at the Feed Materials Production Center, near Fernald, Ohio, a 1986 environmental survey found degradation of on- and off-site ground water quality, the generation of potentially hazardous wastes that had not been fully identified, releases of potentially harmful radon, and a lack of formal sampling and analysis procedures to help identify problems. Similarly, a 1987 survey at the Los Alamos National Laboratory, New Mexico, found improper disposal of hazardous waste, releases

[4]No problems were found in a fourth, most serious category.

[5]These problems are reflected in Environmental Protection Agency compliance data on DOE sites. The agency has administratively designated 20 DOE sites as having serious problems in complying with the Resource Conservation and Recovery Act, the Clean Water Act, and/or Superfund. These sites are listed in table II.5, app. II.

of hazardous materials, leakage of toxic chemicals, and releases of radioactive contaminants into off-site soil and sediments.

Such problems are typical of survey findings at other DOE sites. DOE has recognized the range of its environmental problems in recently issued strategic planning documents. For example, DOE's five-year plan for environmental restoration and waste management describes widespread problems at sites, points out that the full extent of these problems is not yet fully known, and lays out a strategy to begin to deal with them.

Since DOE is further evaluating its environmental problems, many of which will require long-term corrective action, none of them have yet been closed out. To begin to address these problems, corrective action plans have been completed at 28 of 37 sites. DOE guidance, set in late 1987, called for sites to develop and complete action plans within 45 days after the preliminary report is published. However, for over half of the completed plans, DOE and its sites took over 8 months, on average, to complete them. The nine uncompleted plans are in various stages of development; however, some surveys were conducted over 2 years ago. According to DOE, the lengthy time taken to develop and complete some of the plans has been partially related to the challenging nature of the problems and a lack of headquarters environmental compliance staff to review them. In addition, there have been delays in completing the sampling and analysis used to determine the magnitude of the problems and the action required to correct them.

DOE's Computerized Tracking System Needs Additional Data

At the inception of the technical safety appraisal and environmental survey program in 1985, DOE management directed the development of a computerized tracking system to assist in monitoring and addressing safety and environmental problems, including those identified through the technical safety appraisals and environmental surveys. A contract for such a system, known as the Computer-Assisted Tracking System, was entered into in March of 1986. The system is designed to be an easily accessible tracking system that, among other things, provides retrieval capabilities to users at various operational levels on the number and types of problems and the status of corrective actions addressing the problems.

The system has been developed so that it incorporates a variety of data on the results of technical safety appraisals and environmental surveys, but its capabilities need to be better known to potential users and more

data needs to be added to it. The system does not contain some important ES&H data from DOE field office, contractor, and independent ES&H evaluations and/or reports. These data are maintained on other computer or manual systems.

Because some data are not included, the system does not provide DOE management with a complete picture of the ES&H problems the department faces. According to some DOE officials, they have been reluctant to use the system because of its incompleteness. For example, a DOE headquarters manager with responsibility for overseeing field operations said that because of the automated system's limited data, he set up his own computer files to track ES&H corrective actions at DOE sites. In addition, some staff have not used the system. It has not been well known to potential users, and DOE only very recently publicized its potential.

DOE is taking steps to expand the system. In this regard, DOE officials said they are planning to incorporate more ES&H information, including GAO recommendations and monthly site environmental compliance reports, into the computer. When completed, such steps should enable the computer system to provide a more comprehensive picture of the problems DOE faces and thus help DOE managers and oversight organizations at headquarters and in the field to keep track of the department's ES&H problems and measure progress in resolving them. However, the department has not established an overall management plan with milestones specifying the type of ES&H data to be added and when. We believe such a management plan is necessary to prioritize development and expansion of the computer system in a systematic and timely manner to meet the needs of its users.

Conclusions

Although DOE launched a major effort in 1985 to better define the extent of its ES&H problems and systematically address them, our work raises questions about DOE's commitment to resolving its problems in a timely manner. DOE has conducted numerous technical safety appraisals and environmental surveys at its sites that identified a host of problems, and the department—along with its site contractors—is planning and taking corrective actions. However, DOE's own data show that the majority of the identified problems remain unresolved, and DOE and its contractors have been slow to develop plans and take actions to correct them. Some serious safety and health problems have remained unresolved since 1986, and some plans to address environmental problems have been in process for over 2 years. In addition, DOE is still attempting to define the full extent of the environmental problems at its sites.

DOE faces a mammoth, long-term task in cleaning up and modernizing its contractor-operated sites around the country. While we recognize that the full extent of DOE's ES&H problems at these sites is not known—and that many of these problems may be complex and challenging—the department nevertheless should take prompt actions to resolve the many problems already clearly identified. For example, DOE officials told us that there have been delays in completing some corrective actions in part because DOE did not give a high priority to safety compliance followup.

To help ensure that solutions are not further delayed, DOE needs to reaffirm its 1985 commitment to conducting safety and health appraisals and environmental surveys and taking timely corrective actions on identified problems. More specifically, DOE needs to ensure that adequate headquarters and field management attention is focused on the status of the identified problems. Such attention includes line management attention to contractors' corrective actions at sites as well as timely followup by headquarters compliance staff to verify that the actions have been adequate. In addition, DOE's computer-assisted tracking system has the potential, if further expanded in a systematic manner, to provide to various DOE management levels a more comprehensive picture of the status of identified ES&H problems.

Recommendations

To reaffirm DOE's commitment to ES&H problem identification and correction, we recommend that the Secretary of Energy:

- Require that an overall management plan be developed with clear goals and time frames for (1) resolving DOE sites' ES&H problems identified in technical safety appraisals and environmental surveys and (2) following up to verify that corrective actions are adequate, in order to help hold line management and oversight officials at headquarters and in the field more accountable for accomplishing these tasks; and
- Require that the computer-assisted tracking system be systematically expanded—by establishment of an overall management plan and milestones—to include more comprehensive data for the use of DOE line management and oversight officials in monitoring sites' ES&H problems.

Further, as the capabilities of the computer tracking system are enhanced, the Secretary should promote the system's use at various management levels throughout DOE to help ensure timely correction of ES&H problems.

Our review relied in part on computer-generated DOE data regarding ES&H problems at its sites throughout the country. As agreed with your offices, we did not independently verify this computer data. However, we selectively checked it against other records to provide reasonable assurance of its accuracy. We also examined EPA and DOE data on facilities' compliance with environmental laws and interviewed DOE officials concerning matters addressed in the report. A more detailed discussion of our review objectives, scope, and methodology is included in appendix III.

We discussed the contents of this report with agency officials as it was being developed and incorporated their views as appropriate. As requested, we did not obtain official agency comments on a draft of the report. This review was done in accordance with generally accepted government auditing standards.

Unless you publicly announce its contents earlier, we do not plan to distribute the report until 30 days from its issuance date. At that time we will send copies to the Secretary of Energy and other interested parties. This work was done under the direction of Victor S. Rezendes, Director of Energy Issues (202-275-1441). Other major contributors to this report are listed in appendix IV.

J. Dexter Peach
Assistant Comptroller General

Contents

Abbreviations

CATS	Computer-Assisted Tracking System
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
DOE	Department of Energy
EPA	Environmental Protection Agency
ES&H	environment, safety, and health
GAO	General Accounting Office
RCRA	Resource Conservation and Recovery Act
TSA	technical safety appraisal

Unresolved ES&H Problems at DOE Contractor-Operated Sites

In 1985 the Department of Energy (DOE) took several major actions to strengthen its environmental, safety, and health (ES&H) performance. Two of these actions were to initiate a technical safety appraisal (TSA) program and to conduct environmental surveys at its contractor-operated sites. Our review of computerized DOE data from 40 TSAs and 31 environmental surveys revealed over 3,000 ES&H problems of various kinds at DOE sites throughout the country. According to DOE records, the majority of the safety and health problems have not been resolved by DOE and the site contractors, and there have been delays in developing action plans to begin to correct the problems identified in the environmental surveys.

To help monitor safety and environmental compliance, DOE has developed a computer tracking system which incorporates the results of technical safety appraisals and environmental surveys. However, the system does not contain some important ES&H information such as various DOE field office and independent appraisals. Such information could be useful to potential users to provide a more complete picture of the problems DOE faces at its various sites.

Introduction

The Department of Energy oversees nuclear and non-nuclear energy-related activities at many sites located around the country. Sixteen of these sites are included in the nuclear weapons complex, which produces nuclear material (e.g., plutonium and tritium) for weapons and naval fuel. DOE's weapons production sites and facilities include national laboratories and production plants operated under DOE contract by private corporations or universities.[1]

GAO's work over the past several years has documented ES&H problems at many of these sites, including safety questions regarding the operation of government production reactors, problems resulting from aging facilities, and ground water and soil contamination at sites.[2] Because of past mistakes—overemphasis on production, inattention in the environmental area, and complacency with regard to safety—DOE faces the immense task of cleaning up and modernizing its aging nuclear defense complex. The identified problems are so serious that they have at least temporarily shut down key facilities that affect the nation's ability to produce nuclear material for weapons.

[1] DOE sites may contain several separate facilities.

[2] GAO's Views on Modernizing and Cleaning Up DOE's Nuclear Weapons Complex (GAO/T-RCED-89-9, Feb. 21, 1989).

Prior to 1985, ES&H issues did not receive adequate focus within DOE's management structure. We stated in 1981, and again in 1983, that DOE's oversight structure was one cause of the department's ES&H shortcomings.[3] We recommended that DOE set up a separate office, reporting directly to the Under Secretary, to oversee ES&H matters. DOE acted in September 1985 by establishing an Office of Assistant Secretary for Environment, Safety, and Health. This newly created office was to have oversight responsibility for DOE's ES&H activities.

At the same time, DOE also announced a number of other important initiatives to strengthen its ES&H programs. These included revising DOE orders that govern the conduct of the Department's ES&H activities and conducting safety appraisals and environmental surveys at DOE sites to identify the extent of the department's ES&H problems. These appraisals and surveys are particularly important because they are intended to identify problems and provide the necessary information for management to use in strengthening operations and/or setting priorities for corrective action. Also, DOE began to develop a computer-assisted tracking system to monitor ES&H problems, including technical safety appraisal and environmental survey results.

TSA Program

Major objectives of the TSA program are to identify safety and health problems, measure contractor compliance with DOE safety orders, and assess the field offices' success in ensuring compliance by the contractor. TSAs are conducted at DOE's high-hazard nuclear facilities and selected other facilities by teams of specialists led by DOE's Office of Environment, Safety, and Health.[4] A team evaluates the facility's performance in various areas related to safety and health, including the effectiveness of safety management, operations, and quality assurance. After the evaluation, the team prepares a report that identifies concerns in various safety and health categories such as fire protection, radiological protection, and emergency readiness.

Prior to departing a facility, a TSA evaluation team provides a draft of the TSA report to both the DOE field office responsible for the facility and

[3]Better Oversight Needed for Safety and Health Activities at DOE's Nuclear Facilities (EMD-81-108, Aug. 4, 1981); DOE's Safety and Health Oversight Program at Nuclear Facilities Could Be Strengthened (GAO/RCED-84-50, Nov. 30, 1983).

[4]A high-hazard facility is one which has a high potential for significant on-site or off-site releases of radioactive material during a major accident.

the facility contractor. The field office, in cooperation with the contractor, begins to develop an action plan to correct any identified safety and health problems. DOE headquarters program offices review and approve these plans, and then the Office of Safety Compliance evaluates them, monitors the status of corrective actions, and conducts followup inspections to ensure that adequate corrective action has been taken. According to DOE officials, a recommendation will not be formally closed until a DOE representative actually verifies that the corrective action was appropriately accomplished.

Environmental Survey Program

Environmental surveys are intended to identify any specific environmental problems existing at DOE sites and set priorities for necessary corrective action. DOE considers the environmental surveys to be mainly a baseline assessment of the sites' specific environmental problems as part of a department-wide process of prioritizing and addressing these problems, rather than an audit of sites' compliance with environmental standards and laws. The surveys are conducted by teams of technical specialists led by DOE's Office of Environment, Safety, and Health. During the visits on-site, team members identify environmental problems and document them in a preliminary survey report.

After the environmental problems are identified during the survey, the responsible DOE operations office, in cooperation with the contractor, develops a corrective action plan for the site. Because DOE is further evaluating the environmental problems, many of which require long-term corrective action, it is developing corrective action plans before proceeding to close out any problems. The plans include a brief description of both ongoing and planned actions addressing each of the findings and estimate costs and schedules to correct the problems. The division of environmental compliance reviews these action plans and works with the responsible field offices to assure that they are finalized. That division also helps to assure that the action plans work toward compliance with departmental orders and policies as well as federal environmental laws.[5]

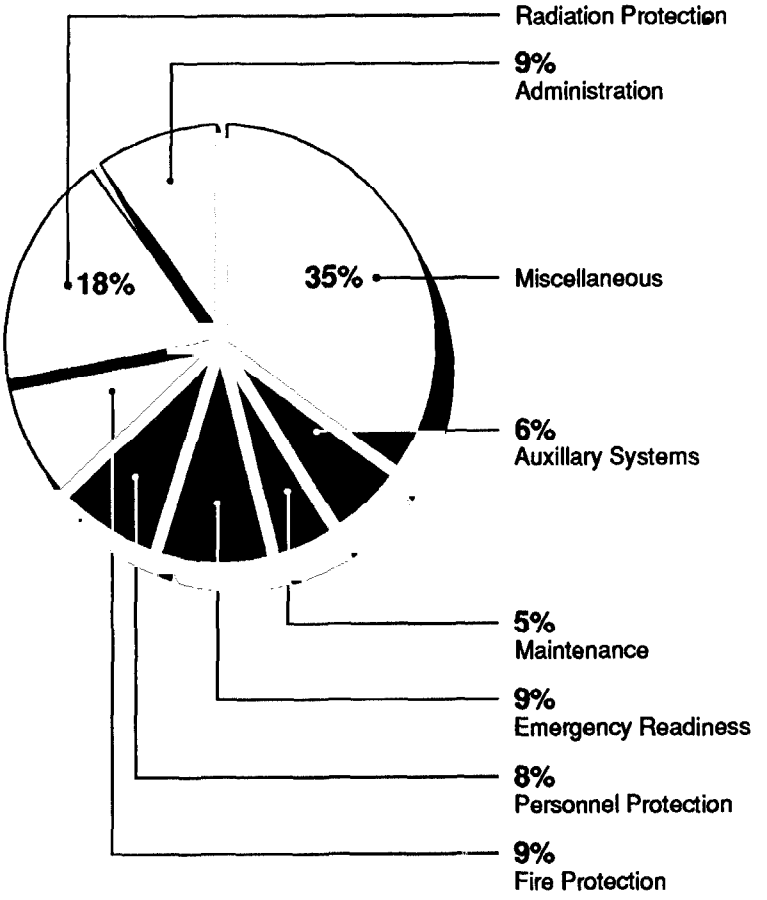
[5]DOE is subject to Environmental Protection Agency (EPA) regulation and enforcement actions under several federal environmental laws, including the Resource Conservation and Recovery Act (RCRA), the Clean Water Act, and the Comprehensive Environmental Response, Compensation and Liability Act, known as Superfund.

Responsiveness to Safety and Health Problems

Since February 1986, DOE has conducted 48 technical safety appraisals of facilities and operations at DOE nuclear and other sites. Of the 48 appraisals, we reviewed data from the 40 appraisal reports (covering 18 sites) that had been computerized, and found that they contained 1,731 safety and health problems—identified in the reports as recommendations.[6]

As shown in figure I.1 below, the recommendations cover various safety areas.

Figure I.1: Types of Safety and Health Problems Specified in TSA Recommendations



Does not total 100% due to rounding.

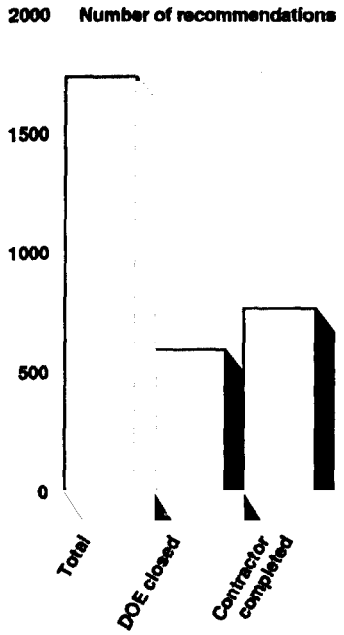
[6]The TSAs are maintained on DOE's computer-assisted tracking system. As of January 1990, 40 of 48 TSAs had been loaded into the system. In the TSAs, findings are interchangeably called either "recommendations" or "concerns." For convenience, in this report we refer to them as recommendations.

A major identified problem area, covering about 18 percent of all recommendations, was radiological protection. Problems in this area relate to matters such as procedures and controls to prevent exposure of employees to harmful radiation. For example, a 1988 appraisal at the Rocky Flats plant in Colorado found inadequate air-monitoring and air-sampling capabilities to detect radiation releases. According to DOE, the air-monitoring system at the plant did not adequately detect radiation at the facility, and DOE stated this was because the contractor neglected to prioritize the system in funding requests to DOE. In addition, a 1988 followup appraisal at the Feed Materials Production Center, Fernald, Ohio, found that the site's contamination control program did not adequately assure that personnel and all material leaving the site were free of contamination.

Other important safety problem areas identified at DOE facilities include inadequate fire protection and emergency readiness. (Table II.1, app. II, includes a detailed list of types of problems at individual facilities.)

DOE has been slow to follow up and correct these problems. Of the 1,731 recommendations in the TSAs we reviewed, only 591 (34 percent) have been closed out by DOE, as shown in figure I.2 below. According to DOE's Acting Director of Safety Compliance, the large number of open recommendations is due to, among other factors, both contractor performance and DOE's own lack of a safety compliance followup program in place to monitor contractor progress until May 1988. He said that until that date DOE did not give priority to safety followup and did not allocate sufficient staff resources to it. More positions have since been allocated, but DOE has had problems in filling these positions in a timely manner.

Figure I.2: Number of TSA Recommendations Closed



"DOE closed" means the department validated closure, while "contractor completed" means the contractor reported to DOE that corrective actions were completed.

As the figure shows, DOE's contractors report more recommendations fully responded to than the number closed out by DOE. As previously stated, DOE will not formally close out a recommendation until it visually verifies that adequate corrective action was taken. As of January 1990, DOE data showed the contractors reported completion of corrective actions on 765 recommendations (44 percent) in comparison to the 591 (34 percent) closed out by DOE. (DOE and contractor closure totals for different problem areas at 18 sites are shown in table II.1, app. II.)

According to the acting Director of Safety Compliance, in some cases contractors may have completed the action but DOE has not yet verified it, while in other cases DOE may find the corrective action taken by the contractor to be inadequate. He added that in other cases DOE and the contractor have agreed on needed longer term actions, but these actions have not been fully funded in DOE's budget. DOE computer data on the closure status of TSA recommendations does not highlight which open recommendations require long-term funding.

DOE data also show that only 46 (41 percent) of the 113 highest priority recommendations have been closed out by DOE. (Numbers of recommendations at sites by category of seriousness are shown in table II.2, app. II.) All of the 113 recommendations were made in 1986. They were defined as an immediate threat to the public and placed in subcategories requiring one of three responses: stoppage of operations, immediate corrective action, or normal corrective action.[7] According to DOE, none of the 113 required stoppage of operations. Ten required the contractor to take immediate corrective action, and 103 required normal corrective action.

As of February 1990, five of the 10 requiring immediate corrective action had not been closed out by DOE. Four of the five concern the Y-12 nuclear plant at Oak Ridge, Tennessee. DOE's Oak Ridge Operations Office considers corrective actions to have been completed for all four, but DOE's Office of Compliance has not yet verified the adequacy of these actions. The status of the four recommendations is as follows:

- A 1986 TSA of the Y-12 plant identified the possibility of off-site radiation contamination because employees were not being monitored as they left the facility. It took Y-12 management almost 2 years to develop a plan to monitor the exit points at the facility. Installation of boundary control stations at the exits and other corrective work was completed in 1988. However, in a followup inspection in March 1989, DOE management determined that actions to address the recommendation were not yet consistent with the urgency of the matter and were not yet adequate to fully correct the problem.
- Another open category I recommendation at Y-12 required installation of a better plant-wide fire alarm system to alert employees in case of fire. The plant has reported progress toward improving the existing public address system to alarm employees to evacuate the plant, but as of the March 1989 inspection a replacement system had not yet been completed.
- Similarly, a third open category I recommendation at Y-12 focused on a building where the alarm system for employees was found to be inadequate, but a new emergency notification system had not yet been completed as of the March 1989 inspection.

[7]The definition of this category was changed in 1987 to include only dangers to workers or the public serious enough to consider stoppage of operations or other immediate mitigation. DOE presently categorizes the seriousness of TSA recommendations as follows: A clear and present danger to workers or the public exists (category I); significant risk exists, or substantial noncompliance with DOE orders (category II); and significant noncompliance with DOE orders exists (category III).

- The fourth open category I recommendation at the plant required conversion of rooms where employees take work breaks into clean areas where contaminated clothing would not be worn. While areas in two buildings had been converted as of March 1989, surveys of the clean areas found procedural problems and occasional contamination.

There have also been delays in meeting DOE milestones for completing safety and health corrective action plans for facilities. After the health and safety problems are documented in a report, there is a 2-month time limit for completion of the plans, but it has taken DOE field offices and facility contractors on the average over 6 months to complete them.

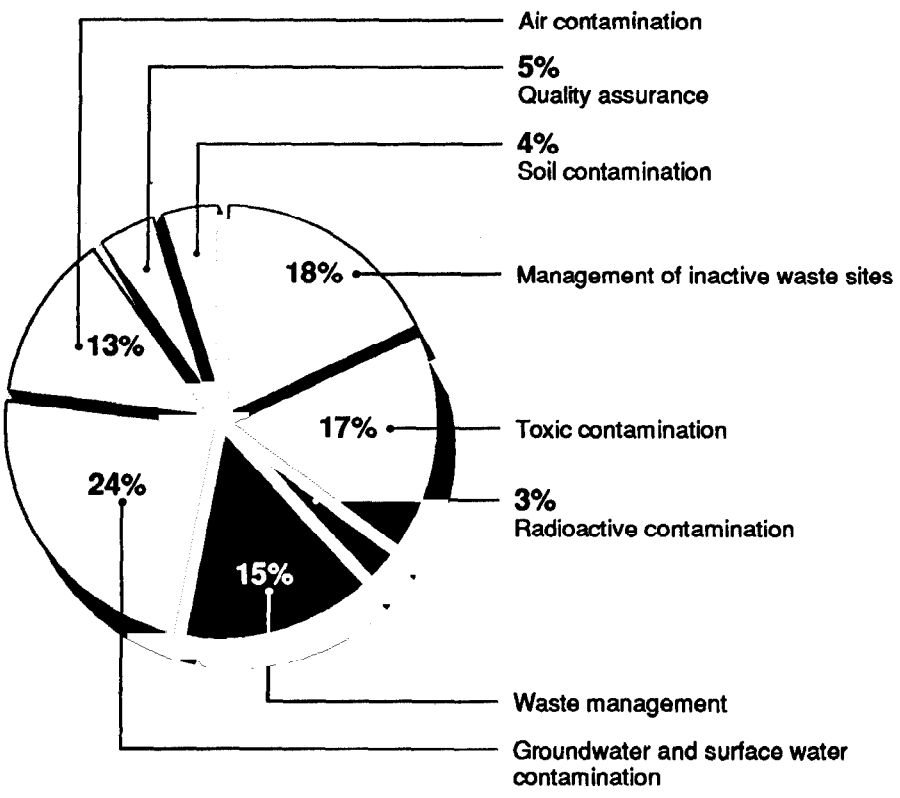
Responsiveness to Environmental Problems

Since 1985 DOE has conducted environmental surveys at 37 of its sites. The surveys are done to identify pollutants, hazardous materials, and/or conditions at sites that may pose a hazard to human health or the environment. All of the surveys have been completed, and many were completed as long ago as 1986, but results of all of them are considered preliminary because DOE is further evaluating the data gathered in the surveys. It hopes to finalize all of the surveys in early 1990. The environmental problems identified in the surveys have proved to be particularly challenging, and DOE is still attempting to fully characterize them.

The surveys of 31 sites have been computerized, and they identify 1,277 problems, or findings. DOE considers all of these findings to be unresolved matters needing attention. Many of the findings involve complex problems requiring further analysis to fully define. Costly, long-term planning and corrective actions will be needed to correct them.

Identified problems at the sites include, among other matters, contamination of the air, surface water, and soil (both on- and off-site), and inadequate waste management practices. The problems involve inadequate monitoring and control procedures related to hazardous materials at sites, serious ground water and soil contamination from hazardous materials, and many other matters. Figure I.3 shows the different areas where problems were recorded in the surveys. (Table II.3, app. II, shows problem areas by site.)

Figure I.3: Types of Problems Specified in Environmental Surveys



Does not total 100% due to rounding.

The surveys identified a wide variety of problems at sites. For example:

- At Fernald, Ohio, a 1986 survey found degradation of on-and off-site ground water quality, generation of potentially hazardous wastes that had not been fully identified, potentially harmful releases of radon, and a lack of formal practices and procedures for formal sampling and analysis of environmental problems.
- At Los Alamos National Laboratory, a 1987 survey found improper disposal of hazardous waste, releases of hazardous material, leakage of toxic chemicals, and off-site releases of radioactive contaminants into canyons where they polluted soil and sediments.
- At the Lawrence Livermore Laboratory in California, a 1986 survey found that a number of areas are or may be contaminated with hazardous substances. These areas constitute actual or potential sources of groundwater contamination. The identification of all potential areas of

contamination, as well as the characterization of those areas, is not complete.

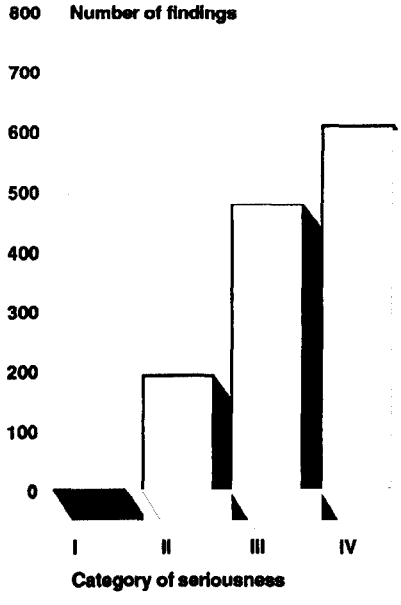
- At the Mound plant in Ohio, a 1986 survey found levels of tritium in on-site and off-site groundwater exceed limits set by the Safe Drinking Water Act. Also, seventeen areas on-site and off-site have varying levels of radioactive surface contamination.

Such problems are typical of survey findings at other DOE sites. Of the nuclear weapons complex sites included in our review, many have numerous environmental problems. Fernald, Savannah River, and Lawrence Livermore have the highest numbers of problems recorded in the surveys, followed by Los Alamos National Laboratory, the Idaho National Laboratory, Hanford, the Y-12 plant, and the Nevada Test Site. Among the most serious problems, Fernald recorded by far the highest number, followed by Portsmouth, the Nevada Test Site, Savannah River, Sandia Laboratory (New Mexico), and Hanford. (See table II.4, app. II, for details.)

The environmental surveys prioritize their findings according to four categories: Under category I, the problem poses an immediate threat to health; under category II, the problem involves a high risk for a threat to health to occur; under category III, the problem has a potential for evolving into a threat to health; and under category IV, the problem is generally administrative noncompliance and/or a practice that is indirectly but not directly related to environmental risk.

As figure I.4 shows, none of the 1,277 environmental survey findings for the sites we reviewed were in category I. One hundred ninety two (15 percent) were in category II, 477 (37 percent) in category III, and 608 (48 percent) in category IV.

Figure I.4: Number of Environmental Problems by Category of Seriousness



DOE's environmental problems are reflected in EPA compliance data. Many of DOE's facilities are in various degrees of noncompliance with major federal environmental laws such as the Resource Conservation and Recovery Act (RCRA), the Clean Water Act (CWA), and the Clean Air Act. Hazardous waste compliance problems related to RCRA have been the most numerous. For example, in fiscal years 1988 and 1989, about a third of 153 EPA and state inspections at DOE locations found environmental violations, including 42 of 74 RCRA inspections. EPA has administratively designated 20 DOE sites as having significant RCRA, Clean Water Act, and CERCLA related problems. (See table II.5, app. II.)

DOE has recognized the range of its environmental problems in recently issued strategic planning documents. For example, DOE's five-year plan for environmental restoration and waste management describes widespread problems at sites, points out that the full extent of these problems is not yet fully known, and lays out a strategy to begin to deal with them.

DOE sites have taken 2 to 3 years to develop corrective action plans to address environmental survey findings. Following the first environmental survey, it took DOE about 1-1/2 years to set a requirement that sites must develop such plans. In late 1987, Departmental guidance required corrective action plans to be developed and completed within 45 days of

DOE's formal publishing of the "preliminary" findings of the surveys. However, sites have had difficulty in meeting this standard. Twenty-eight of 37 corrective action plans have been completed, but over half of the 28 took DOE and its sites longer than 8 months, on average, to complete. The nine uncompleted plans are in various stages of development, and some have been in process for over 2 years. According to DOE officials, the lengthy time taken to complete the plans has been partially related to a lack of headquarters staff to review them. In addition, there have been delays in completing the sampling and analysis used to determine the magnitude of the problems and the action required to correct them.

Computer Tracking System for Monitoring Compliance

At the inception of the technical safety appraisal and environmental survey program in 1985, DOE management directed the development of a computerized tracking system to assist in monitoring and addressing safety and environmental compliance. A contract for development of such a system, known as the Computer-Assisted Tracking System (CATS), was entered into in March of 1986. This system has been developed so that it incorporates a variety of data on the results of technical safety appraisals and environmental surveys, but its capabilities need to be better known to potential users and more data needs to be added to it. Though it has the capacity for more data, the system does not include some important ES&H appraisals needed by users at different management levels in DOE. While several parts of the CATS system are operational, several components contain incomplete information or are still being developed.

CATS is intended to be an easily accessible tracking system that provides retrieval capabilities to its users. It is intended to provide a more complete picture of the problems DOE faces at its various sites. Presently, the primary items tracked in CATS are technical safety appraisals and compliance audits, environmental surveys, and action plans for corrective action on TSA's. In addition, there are plans to place environmental survey corrective action plans on the system in the near future. The system allows users from various operational levels to retrieve and analyze the information in various forms. For example, it allows users to call up specific findings and obtain the current status of corrective actions. Since its inception, the major use of CATS has been for conducting followup and monitoring of previous TSA findings.

Although there are plans for CATS to carry additional ES&H information, several CATS components for adding this information are still being developed. Other evaluations besides TSAs and environmental surveys are conducted at a site or facility, and the results of some of these are not yet on the CATS system. For example, DOE field offices conduct management and functional appraisals. An important such appraisal is the contractor award fee evaluation, which is partially based on the contractor's ES&H performance.[8] In addition, contractors conduct safety appraisals of their own operations. Finally, independent audit agencies, including GAO, conduct evaluations and provide recommendations to DOE. At present, these various DOE and outside evaluations, findings, and recommendations are maintained on different computer or manual systems and are not readily accessible to all management levels.

CATS can be a useful source of ES&H information, but many DOE staff have not used it. The system's potential has only very recently been widely publicized at various management levels in DOE, and some staff have been reluctant to use it. They continue to use other manual and computerized systems. For example, a DOE headquarters manager responsible for overseeing field operations said that due to CATS' limited data he set up his own computer files for monitoring the status of ES&H corrective actions at DOE sites. He and other DOE officials believe there is a need to have wider access to the kind of information that CATS was designed to contain in order to better address ES&H concerns. Further, according to a headquarters program official, his office is not aware of the results of some field or contractor appraisals unless they are visible in a site's operational budget. He said access to these evaluations would enhance the budgeting process for the facilities his office oversees.

An expanded CATS system could benefit DOE managers. For example, contractor award fee evaluations could be computerized in order to keep better track of them and ensure that they accurately reflect all ES&H problems at sites. In addition, more complete computer data would assist TSA and other ES&H evaluation teams. When a TSA team prepares for a TSA at a facility, they are required to review previous TSA findings, unusual occurrence reports, accident/incident reports, contractor environmental and safety appraisals, and DOE field office appraisals. Of these documents, only the TSAs, unusual occurrence reports, and accident/incident reports are available to these teams on the computer system.

[8]Contractors are evaluated by DOE for award fees, which may vary depending on their assessed performance.

Presently, CATS does not contain some important ES&H data which would help DOE managers, staff, and oversight bodies obtain a more complete picture of the problems DOE faces at its various sites. In addition, the department has not established an overall management plan to realize CATS' full potential. Such a plan, prioritizing CATS' broader use and further development for the benefit of both DOE line managers and oversight entities at headquarters and in the field, would help to ensure that the system is optimally expanded. DOE has been developing modules within CATS which would incorporate more types of information and is taking action to put more ES&H evaluations, including GAO recommendations and monthly DOE site environmental compliance reports, into the computer. When completed, these steps will help in monitoring the department's ES&H problems and measuring progress in achieving safety and health and environmental compliance. However, an overall management plan—including specific milestones for when needed additional information is to be available on the system—would better assure CATS' systematic expansion in a timely manner to meet the needs of various potential users.

ES&H Problems at Individual Sites

Table II.1: Number and Types of Safety and Health Problems at 18 DOE Sites

	Type of problem[a]									
Site	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**
Argonne, Ill.	9	1	1	9	0	18	7	7	0	0
Brookhaven, Conn.	8	0	1	3	0	11	4	2	0	0
Fernald, Ohio	9	7	2	19	0	21	3	13	0	0
Hanford, Wash.	22	6	0	35	0	17	15	18	0	0
Idaho Lab.	10	2	3	6	0	11	2	10	0	0
Los Alamos, N. Mex.	8	1	0	12	0	10	7	11	0	0
L. Livermore, Calif.	8	2	0	13	0	2	3	2	0	0
Mound, Ohio	4	0	1	2	0	6	2	1	0	0
Naval Petroleum Reserve, Calif.	0	0	0	0	8	0	0	0	10	4
Paducah, Ky.	3	2	0	0	0	1	2	3	0	0
Pantex, Tex.	0	1	0	3	0	3	1	0	0	0
Portsmouth, Ohio	1	4	0	3	0	2	1	2	0	0
Rocky Flats, Colo.	15	3	1	29	0	36	10	8	0	0
Sandia, N. Mex.	1	0	2	2	0	0	3	3	0	0
Sandia, Calif.	2	0	0	3	0	2	2	1	0	0
Savannah River, S.C.	6	2	0	8	0	9	5	5	0	0
Strategic Petroleum Reserve, La.	0	0	0	0	2	0	0	0	15	2
Y-12, Tenn.	2	4	0	9	0	9	10	2	0	0
Total	**108**	**35**	**11**	**156**	**10**	**158**	**77**	**88**	**25**	**6**

Type of problem[a]																
K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Total	DOE closed[c]	Contractor closed[d]
11	9	0	0	8	0	0	0	11	0	9	0	0	14	**114**	19	29
4	2	0	0	6	0	0	38	10	1	6	0	0	0	**96**	44	55
14	8	0	0	18	0	0	0	42	3	11	0	0	16	**186**	46	48
25	20	0	0	22	0	0	10	48	1	25	0	0	30	**294**	89	108
10	7	0	0	6	0	0	0	17	0	4	0	0	0	**88**	21	54
14	8	0	0	9	0	0	0	22	5	6	0	0	11	**124**	57	60
7	3	0	0	6	0	0	0	22	4	10	0	0	4	**86**	53	55
14	2	0	0	3	0	0	0	10	0	2	0	0	0	**47**	29	29
0	0	3	10	0	9	10	0	0	0	0	6	4	0	**64**	0	0
3	3	0	0	4	0	0	0	11	0	4	0	0	0	**36**	16	23
3	0	0	0	2	0	0	0	4	0	0	0	0	3	**20**	15	17
2	3	0	0	4	0	0	0	9	1	4	0	0	3	**39**	18	26
20	10	0	0	22	0	0	0	73	1	21	0	0	13	**262**	142	183
8	8	0	0	7	0	0	0	11	0	7	0	0	5	**57**	0	0
2	2	0	0	1	0	0	0	5	0	1	0	0	0	**21**	17	17
6	13	0	0	0	0	0	0	9	0	10	0	0	6	**79**	1	34
0	0	1	4	0	2	0	0	0	0	0	2	1	0	**29**	0	0
9	7	0	0	9	0	0	0	15	0	4	0	0	9	**89**	24	27
152	**105**	**4**	**14**	**127**	**11**	**10**	**48**	**319**	**16**	**124**	**8**	**5**	**114**	**1731**	**591**	**765**

[a]A—auxiliary systems; B—nuclear criticality safety; C—experimental activities; D—emergency readiness; E—fire protection for petroleum reserves; F—fire protection; G—facility safety review; H—maintenance; I—management control for petroleum reserves; J—maintenance for petroleum reserves; K—organization and administration; L—operations; M—operations for petroleum reserves; N—personnel protection (industrial hygiene); O—personnel protection; P—public protection for petroleum reserves; Q—personnel protection (occupational safety); R—quality assurance; S—radiological protection; T—security/safety interface; U—training and certification; V—technical support for petroleum reserves; W—transportation and shipping for petroleum reserves; X—technical support.

[c]Closure verified by DOE.

[d]Contractor reported completion of corrective actions to DOE.

Table II.2: Number of Safety and Health Problems Identified/Closed by DOE and Categories of Seriousness at 18 DOE Sites[a]

Site	Category of seriousness[b] I	II	III	None[c]	Total
Argonne, Ill.	0 (0)	1 (0)	112 (19)	1 (0)	**114** (19)
Brookhaven, Conn.	0 (0)	3 (2)	92 (42)	1 (0)	**96** (44)
Fernald, Ohio	0 (0)	11 (3)	85 (3)	90 (40)	**186** (46)
Hanford, Wash.	0 (0)	8 (4)	234 (85)	52 (0)	**294** (89)
Idaho Lab.	0 (0)	2 (0)	85 (21)	1 (0)	**88** (21)
Los Alamos N. Mex.	0 (0)	3 (3)	121 (54)	0 (0)	**124** (57)
L. Livermore, Calif.	14 (10)	18 (11)	50 (32)	4 (0)	**86** (53)
Mound, Ohio	0 (0)	0 (0)	47 (29)	0 (0)	**47** (29)
Naval Petroleum Reserve, Calif.	0 (0)	4 (0)	60 (0)	0 (0)	**64** (0)
Paducah, Ky.	0 (0)	3 (2)	33 (14)	0 (0)	**36** (16)
Pantex, Tex.	0 (0)	0 (0)	20 (15)	0 (0)	**20** (15)
Portsmouth, Ohio	0 (0)	2 (1)	37 (17)	0 (0)	**39** (18)
Rocky Flats, Colo.	36 (23)	46 (32)	180 (87)	0 (0)	**262** (142)
Savannah River, S.C.	33 (1)	32 (0)	14 (0)	0 (0)	**79** (1)
Sandia, Calif.	0 (0)	2 (2)	19 (15)	0 (0)	**21** (17)
Sandia, N. Mex.	0 (0)	2 (0)	54 (0)	1 (0)	**57** (0)
Strategic Petro. Reserve, La.	0 (0)	3 (0)	26 (0)	0 (0)	**29** (0)
Y-12, Tenn.	30 (12)	20 (6)	39 (6)	0 (0)	**89** (24)
Total	**113 (46)**	**160 (66)**	**1308 (439)**	**150 (40)**	**1731 (591)**

[a]Numbers closed by DOE are shown in parentheses.

[b]Category I—Clear and present danger to workers or the public exists, requiring consideration of stoppage of operations or other immediate mitigation; category II—significant risk exists, or substantial noncompliance with DOE orders; category III—significant noncompliance with DOE orders exists. All 113 category I recommendations were made in 1986. Under the definition of category I at that time, they were considered an immediate threat to the public, and three different levels of response were possible—stoppage of operations, immediate corrective action, or normal corrective action. As discussed on p. 18, none of the listed category I recommendations required stoppage of operations, but 10 required immediate corrective action.

[c]A few recommendations in TSAs were not categorized.

Table II.3: Number and Types of Environmental Problems at 31 DOE Sites

	Type of Problem[a]									
Site	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**Total**
Ames, Iowa	1	1	0	0	2	0	5	1	2	**12**
Argonne, Ill.	11	0	10	2	10	1	9	4	17	**64**
Bartlesville, Okla.	3	0	3	1	2	0	5	0	2	**16**
Brookhaven, Conn.	8	3	5	6	8	0	8	3	5	**46**
Fermi, Ill.	1	2	2	2	1	0	6	1	5	**20**
Fernald, Ohio	15	3	9	7	9	2	10	5	8	**68**
Hanford, Wash.	12	2	6	5	6	2	5	4	16	**58**
Idaho Lab.	11	1	6	6	8	4	13	2	8	**59**
K-25, Tenn.	2	2	7	3	7	1	7	0	4	**33**
Kansas City, Mo.	8	2	4	3	2	1	3	4	13	**40**
L. Berkeley, Calif.	3	1	5	4	4	0	3	1	2	**23**
Los Alamos, N. Mex.	2	2	9	3	15	1	14	3	10	**59**
L. Livermore, Calif.	7	3	10	3	10	3	8	3	18	**65**
Morgantown, W. Va.	0	0	6	2	1	0	5	1	3	**18**
Mound, Ohio	5	4	6	5	11	0	5	1	8	**45**
Nevada Test Site	8	3	6	7	8	2	8	2	13	**57**
Naval Petroleum Reserve, Calif.	1	0	9	2	3	0	5	1	5	**26**
Paducah, Ky.	7	2	2	4	8	2	6	1	1	**33**
Pantex, Tex.	4	4	4	2	18	2	10	2	10	**56**
Pinellas, Fla.	2	0	9	6	3	3	5	4	3	**35**
Pittsburgh, Pa.	0	0	5	2	2	0	8	0	5	**22**
Portsmouth, Ohio	12	2	7	6	12	0	9	1	6	**55**
Rocky Flats, Colo.	12	2	3	2	7	1	14	1	11	**53**
Savannah River, S.C.	9	5	13	9	7	1	7	10	4	**65**
Solar Energy Research, N. Mex.	2	0	1	1	7	0	2	2	1	**16**
Sandia, Calif.	3	0	4	2	2	2	3	2	7	**25**
Sandia, N. Mex.	0	0	10	5	8	7	9	5	8	**52**
Stanford, Calif.	4	2	4	3	4	2	4	1	3	**27**
U.C. Davis, Calif.	2	3	3	4	2	3	3	0	3	**23**
X-10, Tenn.	4	2	10	5	4	3	10	0	10	**48**
Y-12, Tenn.	13	3	8	6	6	1	4	2	15	**58**
Total	**172**	**54**	**186**	**118**	**197**	**44**	**213**	**67**	**226**	**1277**

[a]A—air contamination; B—soil contamination; C—surface water contamination; D—ground water contamination; E—waste management; F—radioactive contamination; G—toxic contamination; H—quality assurance; I—management of inactive waste sites.

Table II.4: Number of Environmental Problems and Categories of Seriousness at 31 DOE Sites

Site	Category of Seriousness[a] I	II	III	IV	
Ames, Iowa	0	1	1	10	**12**
Argonne, Ill.	0	7	26	31	**64**
Bartlesville, Okla.	0	2	4	10	**16**
Brookhaven, Conn.	0	7	11	28	**46**
Fermi, Ill.	0	1	6	13	**20**
Fernald, Ohio	0	31	15	22	**68**
Hanford, Wash.	0	10	25	23	**58**
Idaho Lab.	0	7	24	28	**59**
K-25, Tenn.	0	4	7	22	**33**
Kansas City, Mo.	0	5	22	13	**40**
Los Alamos, N. Mex.	0	5	31	23	**59**
L. Berkeley, Calif.	0	1	5	17	**23**
L. Livermore, Calif.	0	4	26	35	**65**
Morgantown, W. Va.	0	2	7	9	**18**
Mound, Ohio	0	9	24	12	**45**
Nevada Test Site	0	15	25	17	**57**
Naval Petroleum Reserve, Calif.	0	8	12	6	**26**
Paducah, Ky.	0	6	6	21	**33**
Pantex, Tex.	0	4	27	25	**56**
Pinellas, Fla.	0	4	5	26	**35**
Pittsburgh, Pa.	0	3	8	11	**22**
Portsmouth, Ohio	0	16	16	23	**55**
Rocky Flats, Colo.	0	5	18	30	**53**
Savannah River, S.C.	0	13	20	32	**65**
Solar Energy Research, N. Mex.	0	1	0	15	**16**
Sandia, Calif.	0	0	10	15	**25**
Sandia, N. Mex.	0	11	15	26	**52**
Stanford, Calif.	0	4	5	18	**27**
U.C. Davis, Calif.	0	2	7	14	**23**
X-10, Tenn.	0	2	29	17	**48**
Y-12, Tenn.	0	2	40	16	**58**
Total	**0**	**192**	**477**	**608**	**1277**

[a]Category I—Problem poses an immediate threat to health; category II—problem involves a high risk for a threat to health to occur; category III—problem has a potential for evolving into a threat to health; category IV—problem is generally administrative noncompliance and/or a practice that is indirectly but not directly related to environmental risk.

Table II.5: DOE Sites Designated by EPA as Having Significant Environmental Compliance Problems

Site	Law/Designation[a]		
	RCRA/significant noncomplier	CWA/ significant noncomplier	CERCLA/on national priorities list
Argonne, Ill.		x	
Bonneville, Wash.[b]			x
Brookhaven, Conn.			x
Fernald, Ohio	x		x
Hanford, Wash.	x		x
Hazelwood, Mo.[b]			x
Idaho Lab.	x		x
Kansas City, Mo.	x		
L. Livermore, Calif.	x	x	x
Los Alamos, N. Mex.	x		
Maywood, N.J.[b]			x
Monticello, Utah[b]			x
Mound, Ohio			x
Oak Ridge, Tenn.			x
Portsmouth, Ohio	x		
Rocky Flats, Colo.	x		x
Sandia, N. Mex.	x		
Savannah River, S.C.	x		x
Weldon Spring, Mo.[b]			x
W.R. Grace, N.J.[b]			x

[a]RCRA—Resource Conservation and Recovery Act; CWA—Clean Water Act; CERCLA—Comprehensive Environmental Response, Compensation, and Liability Act. RCRA significant noncompliers are defined by EPA as land disposal sites with major violations of ground water monitoring, facility closure, post-closure, or financial responsibility requirements. Clean Water Act significant noncompliers are major dischargers that have violated one or more conditions in enforcement orders, or one or more milestones in working toward compliance, or discharge permit effluent limits. CERCLA national priorities list sites are identified for high priority remedial and/or removal actions (Superfund equivalent of a significant noncomplier).

[b]Not among the 31 sites listed in DOE's computerized data on environmental surveys (tables II.3 and II.4).

Objectives, Scope, and Methodology

On March 15, 1989, Senator Metzenbaum and Representative Miller requested that we summarize and evaluate the environmental, safety, management, and health problems at DOE sites that are associated with the activities of the facility contractors. As agreed with your offices, this report focuses on DOE and contractor responsiveness to problems identified in DOE technical safety appraisals and environmental surveys, as well as on compliance with federal environmental laws. We will be reporting to you separately on the status of ES&H-related recommendations made by GAO to DOE. Information on abnormal events at DOE sites was presented to your offices in the form of a briefing on August 2, 1989.

To address matters discussed in this report, we interviewed DOE officials and reviewed various DOE, GAO, and EPA documents and data. To determine the environmental and safety problems identified by DOE through technical safety appraisals and environmental surveys, we obtained access to DOE's computer assisted tracking system. This system maintains TSA and environmental survey findings and the status of corrective actions. As agreed with your offices, we extracted available computer data from this system to identify ES&H problems at sites and the status of actions to correct them. Data was last updated in January 1990. At that time, 40 of 48 completed appraisals had been computerized, as well as 31 of 37 environmental surveys. As also agreed with your offices, we did not independently verify the accuracy of DOE's computer data, but we selectively checked it against other records to provide reasonable assurance of its accuracy.

As requested, we did not obtain formal agency comments on this report. However, we discussed the contents of the report with DOE officials as it was being developed, and their views were incorporated as appropriate. We conducted our field work from May 1989 through January 1990 in accordance with generally accepted government auditing standards.

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