

GAO

Report to the Honorable  
Brock Adams, U.S. Senate

July 1988

# NUCLEAR HEALTH AND SAFETY

## Stronger Oversight of Asbestos Control Needed at Hanford Tank Farms



RESTRICTED—Not to be released outside the General  
Accounting Office except on the basis of the specific approval  
by the Office of Congressional Relations.

542845/136491

---

---

100-100-100

1

---

**Resources, Community, and  
Economic Development Division**

B-222195

July 29, 1988

The Honorable Brock Adams  
United States Senate

Dear Senator Adams:

On August 3, 1987, you asked us to investigate potential problems related to asbestos control at the Department of Energy's Hanford Site in Richland, Washington (DOE/RL). The problems dealt with the handling of asbestos at Hanford's "tank farms"—its series of underground tanks for storing radioactive liquid waste. Specifically, you asked us to determine whether tank farm operators worked in an asbestos area and, if so, whether the operators received appropriate training and monitoring for asbestos exposure. Subsequently, you asked us to determine the causes for any problems that we identified.

---

**Results in Brief**

We found the following:

- Tank farm operators routinely work outdoors where asbestos-containing material is present, and they occasionally assist asbestos workers who handle such materials.
- Contractors responsible for tank farm operations did not consistently provide the training, monitoring, and supervision required under federal regulations for persons who handle asbestos.
- Eight of 14 asbestos requirements were not fully complied with because DOE/RL granted the contractor a 9-month extension—from January to October 1987—to fully implement revised asbestos requirements. The extension allowed, however, was not consistent with DOE orders that prescribe procedures contractors must follow to obtain a short-term release from asbestos requirements. In addition, neither DOE/RL nor the contractor ensured that actual work procedures complied with the other six asbestos requirements or parts of the eight requirements that the contractor had told DOE/RL it was able to meet.

DOE/RL and the contractor have taken or plan to take a number of steps to correct the problems identified during our review. What is needed now is for DOE to ensure that the corrective actions are effectively carried out. Therefore, we are recommending that the Secretary, DOE, direct the Manager, DOE/RL, to actively oversee the program to ensure that its

---

contractors effectively implement and comply with all DOE/Occupational Safety and Health Administration (DOE/OSHA) asbestos requirements.

---

## Background

The Hanford site was established in 1943 to produce plutonium for nuclear weapons and to store the resulting radioactive waste. Among Hanford's facilities are tank farms, which serve Hanford's defense mission by storing liquid radioactive waste from chemical processing operations in large underground tanks. The tank farms are operated by the Westinghouse Hanford Company (Westinghouse), which, as of June 29, 1987, is DOE/RL's principal operating contractor for producing nuclear-defense materials and managing radioactive wastes. Before June 29, 1987, Rockwell Hanford Company (Rockwell), another contractor, had been responsible for Hanford's tank farm operations.

Although safety and health regulations for handling asbestos<sup>1</sup> are generally the responsibility of the Department of Labor's OSHA, federal law exempts from OSHA's jurisdiction contractors operating DOE-owned nuclear facilities. Nevertheless, DOE adopts OSHA standards as a matter of policy and requires its contractors to comply with those standards as DOE regulations.<sup>2</sup> DOE operations offices, such as DOE/RL, are responsible for ensuring that their contractors implement and comply with all DOE requirements.

OSHA regulations call for training, monitoring, and medical surveillance of persons working with asbestos, depending upon their exposure levels. The regulations also require the employer to designate a specifically trained person to monitor all asbestos removal, demolition, and renovation operations except for certain small-scale jobs for which the employer uses proper engineering and work practice controls. They also require that employers reduce employee exposure to airborne asbestos to the lowest level feasible through engineering and work practice controls (temporary enclosures, equipment, and asbestos procedures). In June 1986, OSHA revised its regulations to further reduce workers' risk of exposure to asbestos and required employers dealing with asbestos to comply fully with the revised regulations by January 16, 1987.

---

<sup>1</sup>Asbestos is a toxic substance that causes an incurable lung cancer and other chronic lung diseases that may not be clinically detected until 10 to 40 years after exposure.

<sup>2</sup>These standards were developed pursuant to the Occupational Safety and Health Act of 1970 and subsequently adopted as DOE regulations.

---

## Asbestos Jobs at Hanford Tank Farms and Other Facilities

Tank farm records show that, as of October 20, 1987, six asbestos removal and repair jobs, all of which required assistance by tank farm operators, occurred on the tank farms in 1987. We found that Rockwell did not provide employee monitoring and supervision for the four asbestos jobs for which it was responsible. In addition, Westinghouse, which replaced Rockwell, did not provide employee monitoring for one of the two tank farm asbestos jobs that occurred under its management. Rockwell also did not begin to provide training for tank farm operators until April 1987, even though DOE/RL required training as early as July 1984. As a result, workers may not have been fully aware of the hazards of working with asbestos. In addition, because asbestos levels were generally not monitored, the amount of exposure these workers received is unknown.

Although our review focused primarily on the asbestos program at the tank farms, we examined all 47 monitoring reports completed as of November 16, 1987, on Hanford asbestos jobs, which showed in a number of cases that monitoring and engineering and work practice deficiencies were also present at other Hanford facilities. The reports were prepared by the Hanford Environmental Health Foundation, a health services contractor whose function is to monitor, upon request, workers' exposures to airborne concentrations of asbestos, evaluate the engineering and work practices used, and submit its findings in monitoring reports to the contractors. Appendix II provides details on the numbers and types of deficiencies reported.

---

## Reasons Why Certain OSHA and DOE/RL Regulations Were Not Met

We found two primary reasons to explain why personnel at Hanford's tank farms and other facilities were not working in full compliance with asbestos requirements. First, DOE/RL had implicitly granted Rockwell a waiver exempting it from full compliance with 8 of 14 revised OSHA requirements by the January 16, 1987, mandated deadline. This action, however, was not in accordance with DOE orders that require exemptions to be approved by DOE headquarters. Second, neither DOE/RL nor the contractors ensured that the actual work procedures complied with the other six requirements or parts of the eight requirements that had been reported as having been met.

---

## Compliance Deadline Extended 9 Months

When OSHA revised its asbestos standards in June 1986, it required employers to be in full compliance with the revised regulations by January 16, 1987. As DOE/RL required, Rockwell developed an asbestos control plan for implementing the revised OSHA regulations at the tank farms

---

and at other facilities under its management. According to the DOE/RL industrial hygienist and a Westinghouse safety official, formerly with Rockwell, Westinghouse continued to use Rockwell's asbestos control plan after Westinghouse replaced Rockwell in June 1987. The plan, submitted in January 1987, reported that Rockwell's practices were not in complete compliance with 8 of 14 general OSHA asbestos requirements. According to the former Director for DOE/RL Environment, Safety and Health Division, DOE/RL expected Rockwell to comply with the remaining requirements when staff and equipment became available and extended Rockwell's deadline for compliance to October 1987. This deadline was about 9 months after OSHA's mandated deadline.

In granting the extension, however, DOE/RL did not adhere to DOE orders that require DOE/RL contractors to request a temporary variance (exemption) if they are unable to comply with the regulations because of the unavailability of equipment or staff. Before such an exemption is granted, DOE headquarters approval is required. These orders require contractors to take a number of steps, including (1) analyzing the hazards of performing work that is not in compliance, (2) providing the reasons and technical basis for concluding that the noncompliance is acceptable, and (3) notifying workers of the noncompliance and allowing them to comment on the request for exemption. Because DOE/RL did not require Rockwell to request the exemption, DOE/RL and contractor officials could not be assured that plans for interim work procedures adequately protected the workers. Furthermore, workers were denied the opportunity provided by the exemption process to comment on important matters of safety. (See app. III for additional details.)

---

### Neither DOE/RL Nor the Contractors Ensured Compliance

In addition to DOE/RL's not following DOE-prescribed procedures for granting an exemption from 8 of 14 OSHA requirements, we found that neither DOE/RL nor the contractors ensured that the actual asbestos work procedures met the other six requirements or parts of the eight requirements that the contractor reported as having been met. We found three major reasons why contractors did not take action to ensure compliance with the asbestos requirements:

- Contractors relied on knowledge based on experience rather than on carrying out some DOE-prescribed OSHA requirements. For example, Rockwell did not meet the asbestos requirement to have "competent persons" (individuals capable of identifying hazards and authorizing corrective actions) supervise four tank farm asbestos jobs, in part because

---

safety officials thought that their own guidance in planning the job and the use of trained asbestos workers were sufficient.

- Both DOE/RL and contractor officials told us that they learned, after they had obtained interpretations from Washington State and OSHA, they had misinterpreted parts of the revised regulations. For example, Westinghouse safety officials, formerly with Rockwell, said they misinterpreted OSHA's requirement for monitoring small jobs for which workers use plastic bags fitted with gloves to remove asbestos. Although OSHA has stated that it does not anticipate such small jobs to result in exposures beyond the action level, which is one-half of the permissible exposure limit,<sup>3</sup> it still requires initial employee monitoring to demonstrate that exposures do not exceed the action level.<sup>4</sup> Both Rockwell and Westinghouse did not provide the required monitoring in all cases because they interpreted OSHA's statement to mean that such small jobs did not need to be monitored.
- Both DOE/RL and contractor officials, because of other work demands, did not provide the oversight needed to determine whether OSHA requirements were being met. For example, Westinghouse safety officials, formerly with Rockwell, said that although they conducted oversight surveillance, because of other work demands, they were unable to ensure, as required by OSHA, that each worker was notified of monitoring results and that the contractor maintained current records on each worker's exposure. (See app. IV for more details about these examples and others.)

---

## Actions Taken or Planned to Correct Deficiencies

DOE/RL and Westinghouse have taken or plan to take a number of steps to correct the problems identified during our review. In December 1987, DOE/RL safety officials sent a letter to all Hanford contractors reemphasizing compliance with certain DOE-prescribed OSHA requirements related to monitoring, supervision, and respiratory protection. In addition, the letter directs contractors to request an exemption from DOE-prescribed OSHA requirements if they cannot comply with them.

DOE/RL contracted with an engineering firm in December 1987 to review its contractors' asbestos control programs for compliance with the OSHA

---

<sup>3</sup>The permissible exposure limit is 0.2 fibers per cubic centimeter averaged over an 8-hour period.

<sup>4</sup>Prior monitoring results for similar jobs or objective data could be used to satisfy the monitoring requirement. However, neither contractor had objective or historical data that would meet OSHA's criteria.

regulations. The contract requires the consultant to make five unannounced field appraisals of ongoing asbestos work during the 4-month period ending in May 1988. The contract also calls for a one-time evaluation of asbestos work performed by Hanford contractors, along with appropriate recommendations. Additionally, in February 1988, the Manager of DOE/RL requested that the National Institute of Occupational Safety and Health assess Hanford's asbestos abatement programs as soon as possible. The purpose of the assessment was to review the contractors' operating asbestos abatement policies and to compare them with the Institute's policy and OSHA standards. The summary results of this assessment, reported to DOE on May 23, 1988, stated that the asbestos abatement program at the Department of Energy, Hanford Site, is very good. It added that the Institute believes that "... the asbestos workers should be protected from excess risk, provided that the contractors adhere to their written policies."

The Manager of Westinghouse's Defense Waste Management Division, which includes the tank farms, informed DOE/RL in August 1987 that Westinghouse would provide an asbestos medical exam to any tank farm operator who desired one. Westinghouse officials also told us they would clarify the role of tank farm operators in assisting asbestos workers to ensure that operators do not receive any exposures that would require that they be eligible for the medical surveillance program.<sup>5</sup> In addition, by October 1987 nearly all tank farm operators were provided the required training. The Manager also informed DOE/RL in October 1987 that it would provide employee exposure monitoring for any tank farm activity "which may have the potential for developing airborne asbestos fibers." Furthermore, the tank farm maintenance manager told us that, as of October 1987, the tank farms were prepared to use competent persons to supervise asbestos work and that the competent person would record the names of workers who enter a regulated asbestos area.

---

## Conclusions and Recommendations

DOE/RL has taken a number of steps to improve the asbestos program. Some corrective actions to meet OSHA requirements have already been completed, but the effective implementation of others will need to be assessed on future asbestos jobs. Consequently, we believe there is a continuing need for DOE/RL oversight to ensure that its contractors implement and comply with all DOE requirements.

---

<sup>5</sup>OSHA requires employers to institute a medical surveillance program for all employees who are engaged in work involving asbestos levels at or above the action level for 30 or more days per year who are required to wear a negative pressure respirator.



---

Therefore, we recommend that the Secretary, DOE, direct the Manager, DOE/RL, to build on recent corrective initiatives by actively overseeing the asbestos program to ensure that its contractors effectively implement and comply with all DOE/OSHA asbestos requirements.

---

## Agency Comments

A draft of this report was submitted to DOE and OSHA for comment. DOE agreed with our recommendation and is requesting the managers of all field offices to maintain active oversight of contractors' asbestos control programs to ensure compliance with DOE/OSHA requirements. The text of DOE's comments and GAO's response are presented in appendix V. In addition, DOE submitted editorial comments under separate cover; we considered these and incorporated them in the text where appropriate. OSHA provided only technical comments, which we also considered and incorporated into the report as appropriate.

---

Our work focused primarily on 1987 asbestos activities at the tank farms that were documented as of October 1987. We also performed a limited review of asbestos work at other Hanford facilities. Our work was performed in accordance with generally accepted government auditing standards. A more detailed discussion of our review objectives, scope, and methodology is provided in appendix I.

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

This work was performed under the direction of Keith O. Fultz, Senior Associate Director. Other major contributors to this report are listed in appendix VI.

Sincerely yours,



J. Dexter Peach  
Assistant Comptroller General

# Contents

Letter		1
Appendix I Objectives, Scope, and Methodology		10
Appendix II Engineering and Work Practice Deficiencies at Other Hanford Facilities		11
Appendix III Compliance Deadline Extended 9 Months		15
Appendix IV Reasons Why Asbestos Requirements Were Not Met	Reliance on Judgment Misinterpretation of Regulations Other Work Demands	15 15 17 19
Appendix V Comments From the Department of Energy		2
Appendix VI Major Contributors to This Report	Resources, Community, and Economic Development Division, Washington, D.C. Seattle Regional Office	2 2 2

---

**Abbreviations**

DOE	Department of Energy
DOE/OSHA	Department of Energy/Occupational Safety and Health Administration
DOE/RL	Department of Energy's Hanford Site in Richland, Washington
GAO	General Accounting Office
OSHA	Occupational Safety and Health Administration

# Objectives, Scope, and Methodology

---

On August 3, 1987, Senator Brock Adams requested that we investigate potential asbestos problems at DOE's Hanford site in Richland, Washington. Specifically, he requested that we obtain information on

- whether tank farm operators were working in an asbestos area,
- if such operators were being monitored for asbestos exposure, and
- if they had been trained to work in an asbestos area.

On October 29, 1987, we briefed the Senator's office on the status of our work. At that time, we agreed to address a follow-up issue: What were the causes of the problems we found?

Although our review was focused primarily on asbestos work that occurred at Hanford's tank farms as of October 1987, we also conducted a limited review of asbestos work that occurred at Hanford's other facilities, including nuclear reactors and chemical processing plants. We reviewed DOE's, DOE/RL's, and OSHA's policies and procedures and compared them with Hanford contractors' policies, procedures, and plans related to asbestos work at the tank farms. We also reviewed other pertinent documents, such as asbestos monitoring reports prepared by the Hanford Environmental Health Foundation, a health services contractor whose function is to monitor, upon request, workers' exposures to airborne concentrations of asbestos, evaluate the engineering and work practices used, and submit its findings in monitoring reports to the contractors.

We met with officials from DOE's Office of the Assistant Secretary for Environment, Safety, and Health to discuss DOE headquarters' role and responsibilities pertaining to the asbestos control program. In addition, we discussed the nature and extent of asbestos work at Hanford with DOE/RL's Nuclear Occupational Safety Division and Westinghouse's Industrial Safety and Fire Protection Office officials—the offices with oversight responsibilities for Hanford's asbestos control program.

We also held discussions with tank farm managers and operators and with officials and monitoring agents from the Hanford Environmental Health Foundation to discuss asbestos work performed at the tank farms and other Hanford facilities. Further, we discussed OSHA asbestos regulations with the OSHA official who interprets the asbestos regulations for OSHA compliance officers. Our work was conducted between September 1987 and February 1988 in accordance with generally accepted government auditing standards.

# Engineering and Work Practice Deficiencies at Other Hanford Facilities

The Hanford Environmental Health Foundation is a Hanford health services contractor that provides health-related services on request to other DOE contractors at Hanford. Some of the Foundation's functions are to monitor, upon request, workers' exposure to airborne concentrations of asbestos; evaluate the engineering and work practices used; and submit report findings to the contractors.

During our review, we looked at all 47 monitoring reports on Hanford asbestos jobs (the removal, repair, or cleanup of asbestos-containing material) completed by the health services contractor as of November 16, 1987. Twenty-nine of the 47 reports contained evaluation or monitoring results for the asbestos jobs while the work was in progress. The other 18 reports contained the results of monitoring after the work was completed to determine if cleanup efforts had been effective. Twenty-seven of the 29 reports of work in progress showed that the health service contractor attempted to monitor the breathing zone of workers to determine their exposure to asbestos. Worker exposures were shown to have exceeded the permissible limit in 8 of the 27 reports. Although OSHA requires employers to use all feasible engineering and work practice controls to reduce worker exposure to asbestos to or below the permissible exposure limit, in four of the eight reports, the health services contractor reported that inadequate engineering and work practices were used. Although the workers wore respirators, OSHA requires employers to use all engineering and work practice controls feasible before supplementing such controls with respirators. An OSHA headquarters official told us that OSHA does not allow employers to substitute respirators for controls because the asbestos hazard is most effectively minimized by controlling it at its source and because respirators are subject to human misuse.

In addition, among the 27 reports where employee monitoring occurred, we found that (1) only 3 reports showed that workers were monitored for the entire time they performed asbestos work during an 8-hour shift as required by OSHA, (2) 15 reports did not document the length of the asbestos job, and (3) 9 reports showed that workers were monitored for less than the documented time workers performed asbestos work in an 8-hour shift (1 of the 9 reports also did not report the actual job length for 1 of 2 monitored workers). The 27 reports also showed that in 13 reports (including the 4 reports cited above that reported use of inadequate engineering and work practice controls) workers did not use proper engineering or work practice controls, hygiene facilities, and/or personal protective equipment. In discussing the poor work practices documented by these monitoring reports, safety officials from DOE/RL,

---

**Appendix II  
Engineering and Work Practice Deficiencies  
at Other Hanford Facilities**

---

Westinghouse, and the Hanford Environmental Health Foundation said such practices demonstrated a problem in the supervision of these jobs.

# Compliance Deadline Extended 9 Months

As DOE/RL required, Rockwell developed an asbestos control plan for implementing OSHA's revised regulations, issued in June 1986, at the tank farms and at other facilities under its management. In the plan, submitted in January 1987, Rockwell reported that its practices were not in complete compliance with 8 of 14 general OSHA asbestos requirements. For example, Rockwell indicated that it was not in compliance with the regulation requiring employers to establish, wherever feasible, enclosures equipped with an exhaust and filter system before commencing removal, demolition, and renovation operations. However, Rockwell included a time schedule for the eight areas of noncompliance stating when it would be in compliance or would conduct an evaluation to determine what needed to be done to come into compliance. For example, Rockwell planned to evaluate the operations of each of its asbestos crews by January 30, 1987, to determine whether it needed to purchase any exhaust and filter systems.

DOE/RL officials told us that they assessed the plan and made the determination that Rockwell was implementing those requirements that needed to be implemented to avoid an imminent hazard to worker's safety.<sup>1</sup> The former Director for DOE/RL Environment, Safety and Health Division, who monitored Rockwell's performance in developing the plan and implementing the requirements, told us that DOE/RL expected Rockwell to comply with the remaining requirements when staff and equipment became available. He stated that because he was aware that Rockwell did not have the necessary staff and equipment to comply with the regulations and because Rockwell was unsure of the amount of asbestos material in the approximately 900 facilities that it operated, DOE/RL extended Rockwell's deadline for compliance to October 1987. This deadline was about 9 months after OSHA's mandated January 16, 1987, deadline to fully implement the revised regulations.

OSHA's explanation of the revised regulations state that if the time period for meeting the startup date cannot be met because of technical difficulties (i.e., unavailability of professional or technical personnel or of materials and equipment needed to come into compliance with the standard), any employer is entitled to petition for a temporary variance. In accordance with DOE orders (DOE Orders 5480.4 and 5483.1A and DOE/RL Order 5480.4), which require contractors to request a temporary variance (exemption) if they are unable to comply with the regulations,

<sup>1</sup> According to the Director for DOE/RL Nuclear and Occupational Safety Division, DOE/RL does not plan to formally approve the contractor's plan until it conducts a formal appraisal of the contractor's asbestos control program in April 1988.

the Manager, DOE/RL, should then have forwarded the request for exemption to DOE headquarters for final approval or disapproval. These orders, if applied, would have required Rockwell to take a number of steps, including (1) analyzing the hazards of performing work that was not in compliance, (2) providing the reasons and technical basis for concluding that the noncompliance was acceptable, and (3) notifying workers of the noncompliance and allowing them to comment on the request for exemption.

According to the former Director for DOE/RL Environment, Safety and Health Division, DOE/RL did not require Rockwell to request an exemption because it believed that no imminent danger to worker health was involved and that extending the deadline for Rockwell was effectively granting a waiver. The DOE/RL industrial hygienist told us that DOE/RL did not require Rockwell to request an exemption because the formal exemption process would have taken 6 months to a year and, since he believed Rockwell would be in compliance within 9 months, it would not have made sense to go through the formal exemption process.

In addition, the former Director told us that DOE/RL notified DOE headquarters of Rockwell's difficulty in meeting OSHA's mandated deadline. The former Director stated that DOE headquarters told DOE/RL to use its best judgment to ensure that Rockwell achieved compliance and provided no other specific guidance. As noted above, however, the requirement to request the exemption is mandatory. Because DOE/RL did not require Rockwell to request the exemption, DOE/RL and contractor officials could not be assured that plans for interim work procedures adequately protected the workers. Furthermore, workers were denied the opportunity to comment on important matters of safety.



# Reasons Why Asbestos Requirements Were Not Met

---

Our review showed that the contractors' work procedures at the tank farms and other Hanford facilities did not, in all cases, meet asbestos requirements. We found three reasons why contractors' work procedures were not in compliance with the requirements: (1) contractors relied on knowledge based on their professional judgment rather than carrying out some DOE-prescribed OSHA requirements; (2) both DOE/RL and contractor officials misinterpreted parts of the revised regulations; and (3) because of other work demands, both DOE/RL and contractor officials did not provide the oversight needed to determine whether OSHA requirements were being met. Examples of how these circumstances affected compliance with asbestos requirements are shown below.

---

## Reliance on Judgment

As early as July 19, 1984, DOE/RL required contractors to provide training to all employees who could be overexposed to asbestos fibers. The training would have informed tank farm operators of the hazards of asbestos and the precautions that should be taken when working with it. However, contractor safety officials told us that Rockwell did not begin training the tank farm operators until April 27, 1987, shortly after a tank farm operator complained about the lack of training. A contractor safety official told us that Rockwell did not provide the required training to tank farm operators previously because it believed that the operators, who assisted asbestos workers, were not as closely involved in asbestos work as they actually were and, therefore, could not be overexposed to asbestos.

The Manager of the tank farm processing operations told us that tank farm operators monitor various tank farm operations to ensure that proper equipment procedures are followed and to ensure radiation containment. According to the Manager, 85 tank farm operators may assist trained, state-certified asbestos workers in removing and repairing asbestos materials used to insulate above-ground steam pipes and other equipment on the tank farms, but that primarily 33 tank farm operators have done so. He also said that, during the job, asbestos workers direct tank farm operators on asbestos safety procedures. Although Westinghouse officials told us that the operators are present to tell asbestos workers how to handle the farm equipment and to assist in the disposal of asbestos waste after it has been properly packaged by asbestos workers, two tank farm operators told us they have been directly involved in packaging asbestos waste during asbestos jobs.

- On January 16, 1987, OSHA required employers to designate a “competent person” for all asbestos removal, demolition, and renovation operations except for small-scale, short-duration maintenance and renovation operations, such as pipe repair and valve replacement, for which the employer uses proper engineering and work practice controls. OSHA defines “competent person” as someone who (1) is capable of identifying existing and predictable hazards in the surroundings or identifying work conditions that are hazardous or dangerous to the employees and (2) has authorization to take prompt corrective action to eliminate them. According to an OSHA headquarters official who interprets the asbestos regulations for OSHA compliance officers, the responsibilities of a competent person (such as supervising employee monitoring and ensuring proper engineering and work practice controls) require the competent person to be continuously present throughout the job.

On the basis of discussions with the OSHA headquarters official and the tank farm maintenance manager, we determined that although four of the six asbestos jobs documented by job records as occurring at the tank farms in 1987 required a competent person, Rockwell did not designate a competent person for these jobs. Westinghouse safety officials, formerly with Rockwell, said that when they first reviewed the OSHA competent person requirement, they were confused by the regulation and believed that their own guidance in planning the job and the use of trained asbestos workers to do the work would serve the purpose of the competent person requirement. However, Westinghouse safety officials said that they did not actually designate one of the asbestos workers, most of whom were not managers, to act as the competent person during the job. Contractor safety officials told us that when the state required certification of the competent person in May 1987, they reevaluated the competent person requirement and realized that someone of management authority had to be continuously present throughout the job.

- Unless workers are wearing the maximum amount of respiratory protection, OSHA requires daily monitoring on asbestos jobs where employee exposures can reasonably be expected to exceed the permissible exposure limit until the monitoring data show that the levels are below the action level (half the permissible exposure limit).<sup>1</sup> An OSHA headquarters official who interprets the regulations for OSHA compliance officers told us that without such monitoring, employers cannot know for sure whether workers are using effective engineering and work practices. On

---

<sup>1</sup>Respirators vary in the level to which they protect workers. For example, some filter out asbestos fibers from the air inhaled, while others supply an external source of noncontaminated air.

the basis of our review of the health services contractor's reports, we determined that Rockwell, Westinghouse, and two other contractor employees who were not wearing the maximum amount of respiratory equipment, and whose exposures exceeded the action level, were not always monitored on a daily basis. According to a health services contractor manager, daily monitoring was not done on each job if the monitoring agents judged that the job did not need further monitoring. Their decisions were based on how well they thought the job was supervised and whether they believed the workers were using the appropriate work practices. The health services contractor manager also told us that the lack of daily monitoring was not a concern because the workers were wearing appropriate protective respiratory equipment and the monitoring only served to verify that the engineering and work practice controls were sufficient. However, OSHA believes that respiratory equipment is subject to human misuse, and it requires employers to first control the spread of asbestos at its source through engineering and work practice controls. Also, as noted above, according to the OSHA official, monitoring is required to document the effectiveness of these controls.

- OSHA allows employers to determine the level of respiratory protection needed in a number of ways, one of which is to use historical monitoring data from comparable jobs.<sup>2</sup> OSHA calls for the comparable job to closely resemble the proposed job in terms of the processes, type of material, control methods, work practices, and environmental conditions. Although the health services contractor manager said he used monitoring results from previous jobs, he also told us that he did not analyze or compare the required factors to ensure that the previous jobs were comparable to proposed jobs. Such a comparison may not have been possible because the health services contractor monitoring reports do not always document the required factors. The DOE/RL industrial hygienist told us that DOE/RL relied on the health services contractor's assessment in providing guidance to all Hanford contractors on the type of respiratory equipment needed.

---

## Misinterpretation of Regulations

- OSHA permits "representative" monitoring and, in its preamble to asbestos regulations, revised June 1986, explains that representative monitoring allows employers to monitor the asbestos exposure level of one worker in a group of workers all performing the same task under the

---

<sup>2</sup>Employers may also conduct initial monitoring or demonstrate that the product containing asbestos is not capable of releasing asbestos fibers in concentrations at or above the action level under those work conditions having the greatest potential for releasing asbestos.

same conditions. OSHA requires such monitoring throughout the entire operation. However, DOE/RL and the health services contractor said they believed that representative monitoring meant they were permitted to monitor one worker for an interval of time that was less than, but representative of, the worker's exposure for the entire operation. An OSHA headquarters official, who interprets the revised regulations for OSHA compliance officers, told us that, because asbestos levels are likely to vary throughout the entire operation, contractors cannot be assured that the interval monitoring results represent the worker's actual exposure to asbestos.

As discussed earlier, among 27 reports that contained information on employee monitoring that occurred at Hanford facilities, 9 reports show that workers were monitored for less than the documented time that workers performed asbestos work in an 8-hour shift. (See app. II.)

- OSHA requires employers to initially monitor each asbestos job unless the employers can demonstrate that employee exposures are likely to be below the action level by means of objective data or prior monitoring results obtained during work operations under workplace conditions closely resembling the processes, type of material, control methods, work practices, and environmental conditions used. OSHA requires daily monitoring when asbestos levels are reasonably expected to exceed the permissible exposure limit.<sup>3</sup>

Westinghouse safety officials, formerly with Rockwell, told us that they did not request the health services contractor to monitor three of four glove bag operations that occurred in radiation zones on the tank farms in 1987 because they believed that DOE/RL regulations exempted them from monitoring such operations where workers use plastic bags fitted with gloves to remove asbestos. To support their assertion that glove bag operations involved a small risk of exposure, the Westinghouse safety officials provided us with the monitoring results from four glove bag operations, none of which occurred on the tank farms. Asbestos levels exceeded the permissible exposure limit in one of the four glove bag operations. According to an OSHA headquarters official who interprets the asbestos regulations for OSHA compliance officers, on the basis of these four data sets, the contractor cannot conclude that the asbestos levels from proposed glove bag operations will be consistently below the

---

<sup>3</sup>Daily monitoring can be terminated when monitored levels show that employee exposures are below the action level. Daily monitoring is not required when workers are wearing the maximum level of respiratory protection.

---

action level. Barring the existence of prior monitoring results or objective data, the OSHA official said, employers should still perform the initial monitoring to show that levels are below the action level, and if asbestos levels exceed the action level, employers should perform daily monitoring.

The contractor safety officials also said that, because these jobs occurred in a radiation zone, they considered that the health services contractor would not be able to collect an asbestos sample if it became radioactively contaminated. However, a health service contractor manager told us that health services contractor hygienists have successfully collected noncontaminated asbestos samples in a radiation zone and that contaminated samples are not a problem unless loose pieces of contaminated asbestos debris fall into the filter.

---

## Other Work Demands

- OSHA requires employers to (1) notify each worker involved in asbestos work about the monitoring results that represent the worker's exposure, (2) maintain a record of each worker's exposure measurements, and (3) institute a medical surveillance program for all workers who have been exposed to asbestos levels at or above the action level for 30 or more days per year. Although the contractor's asbestos control standard addressed these requirements, Westinghouse safety officials, formally with Rockwell, told us that other work demands prevented them from determining whether these requirements were actually met. We found that Westinghouse was not notifying all workers involved in the same asbestos job of their exposure levels, nor was the contractor maintaining complete exposure records for all these workers. Without such records, the contractor could not know which workers were eligible for the medical surveillance program.
- DOE/RL assigned its industrial hygienist, who is also its asbestos control expert, to track Rockwell's performance in achieving compliance with the revised regulations. On the basis of a review of all the industrial hygienist's surveillance reports, we determined that the hygienist did not actually visit Rockwell asbestos job sites or Westinghouse job sites formerly under Rockwell management until July 1987. According to the DOE/RL industrial hygienist, he was not able to conduct surveillance visits to these sites because of his involvement in safety issues related to the reorganization of Hanford's contractors and the shutdown of Hanford's production reactor and two chemical processing plants. Our review of health services monitoring reports of Rockwell asbestos jobs prior to Westinghouse's replacing Rockwell revealed that Rockwell was

---

**Appendix IV  
Reasons Why Asbestos Requirements Were  
Not Met**

---

having difficulty implementing some of the requirements. Had the hygienist reviewed these reports or made job site visits, he may have identified problem areas sooner and could have prompted the contractor to take corrective action. The hygienist said that through his own surveillance visits since July 1987, he found that Westinghouse (specifically, those facilities formerly under Rockwell management) had a problem with its asbestos control program. On the basis of the hygienist's visits and recommendations, the Acting Director for DOE/RL Nuclear and Occupational Safety Division has recommended to the President of Westinghouse Hanford Company to expand training for tank farm operators and managers and to increase monitoring of personnel and their work areas. In addition, the DOE/RL industrial hygienist stated that since July 1987, surveillances have been more subject-specific, for example, asbestos, as opposed to general safety-related.

# Comments From the Department of Energy

Note: GAO comments supplementing those in the report text appear at the end of this appendix.



**Department of Energy**  
Washington, D.C. 20585

JUN 10 1987

Mr. Keith O. Fultz  
Senior Associate Director  
Resources, Community, and  
Economic Development Division  
U.S. General Accounting Office  
Washington, D.C. 20548

Dear Mr. Fultz:

The Department of Energy (DOE) appreciates the opportunity to review and comment on the General Accounting Office (GAO) draft report entitled "Nuclear Health and Safety: Stronger Oversight of Asbestos Control Needed at Hanford Tank Farms."

Major comments include the following:

Recommendation, page 11

"... we recommend that the Secretary, DOE, direct the Manager, DOE/RL, to build on recent corrective initiatives by actively overseeing the asbestos program to ensure that its contractors effectively implement and comply with all DOE/OSHA asbestos requirements."

Comment

The Department agrees with this recommendation and by copy of this we are requesting the managers of all field offices to maintain an active oversight of its contractors' asbestos control program to assure compliance with DOE/OSHA requirements. Since the GAO investigation, the Richland Operations Office has initiated two special reviews of its contractors' asbestos programs, the Department has issued a memorandum to all field elements providing guidance on the implementation of asbestos control, DOE Order 5480.10, "Contractor Industrial Hygiene Program," is being revised to feature requirements for asbestos control and the subject of asbestos control will be emphasized in all subsequent Technical Safety Appraisals undertaken by the Department. Thus, the GAO recommendation will be implemented throughout all DOE Government-owned contractor-operated activities.

Now on p. 7.

**Appendix V  
Comments From the Department of Energy**

Now on p. 1.

Finding 3, page 3

"... eight of fourteen asbestos requirements were not fully complied with because DOE/RL granted the contractor a 9-month extension -- from January to October 1987 -- to fully implement revised asbestos requirements. The extension allowed, however, was not consistent with DOE orders that prescribe procedures contractors must follow to obtain a short-term release from asbestos requirements. In addition, neither DOE/RL nor the contractor ensured that actual work procedures complied with the other six asbestos requirements or parts of the eight requirements that the contractor had told DOE/RL it was able to meet."

Comment

See comment 1.

RL and its contractors developed a plan for complying with the new OSHA asbestos standard. It was the implementation of this plan that was delayed 9 months. The standard allows for alternative methods to be used to control asbestos exposure. The granting of the extension for implementing the plan was not considered by RL or its contractors to be equivalent to granting an exemption. Both expected to be able to meet the standard by using available controls and respirators during the interval necessary to obtain and install additional engineering controls [refer to 29 CFR 1926.58 (h)(1)(i)].

RL and its contractors have established programs to overview health and safety programs, of which asbestos control is a part. The assurance of compliance with the revised OSHA asbestos control regulations was being actively pursued by RL and its contractors. An asbestos abatement plan had been established even with the lack of clear and consistent interpretation of the requirements by OSHA contacts on the regional and national level. In spite of the uncertainty that existed, it is the Department's view that RL and RL contractors were acting in good faith to understand and implement the new asbestos requirements in a logical, proper, and timely manner.

Two additional changes would add to the completeness of the report:

Now on p. 6.  
See comment 2.

- 1) On page 10, a reference was made to the assessment of the Hanford asbestos abatement program conducted by the National Institute of Occupational Safety and Health "to determine whether the programs comply with OSHA's asbestos standards and whether workers who are exposed to asbestos are adequately protected." The report of that assessment should be appended to the GAO report.
- 2) On page 5, the statement is made that "... because asbestos levels were generally not monitored, the amount of exposure these workers received is unknown." The implication that these workers may have been overexposed is incorrect. Both RL's evaluation and monitoring by the service contractor verified that these employees were not and have not been over-

Now on p. 3.  
See comment 3.



**Appendix V**  
**Comments From the Department of Energy**

exposed to asbestos fibers because a) employees always wore, as a minimum, a fit-tested full face respirator, b) asbestos removal work was performed by an engineering control glove bag method, and c) hands-on work was performed by trained, certified asbestos workers.

DOE hopes that these comments will be helpful to GAO in their preparation of the final report. Editorial comments are being provided to GAO under separate cover.

Sincerely,

*Lawrence F. Davenport*  
for Lawrence F. Davenport  
Assistant Secretary  
Management and Administration

cc:  
Field Office Managers

The following are GAO comments on DOE's letter dated June 10, 1988.

## GAO Comments

1. The contractor's plan for implementing the new OSHA standards showed that as of the compliance deadline date of January 16, 1987, the contractor was not in full compliance with 8 of 14 asbestos requirements. Further, in a January 22, 1987, letter transmitting the plan to DOE/RL, the contractor reported that implementation of the plan would result in a fully functional program by October 1987.

According to DOE Order 5480.4, OSHA environmental protection, safety, and health standards adopted by DOE are mandatory. In addition, DOE and its contractors must follow the OSHA procedures requesting exemption (a temporary or permanent release) from the mandatory standards if compliance cannot be met. Neither of DOE's positions—which state “. . . it was the implementation of the plan that was delayed 9 months” and “. . . granting extension for implementing the plan was not considered by DOE/RL or its contractors to be equivalent to granting an exemption”—negates the fact that OSHA standards adopted by DOE require the field organization to request an exemption and submit it to DOE headquarters if the field organization is unable to comply with a standard. In this case, 8 of 14 asbestos requirements could not be fully complied with by the compliance deadline date.

In addition, while OSHA standards allow for alternative methods to be used for asbestos control, the alternatives must be reviewed and approved by DOE headquarters through the exemption process. This process requires providing an explanation to DOE headquarters for why the field organization is unable to comply with a standard and a statement of steps to be taken that will provide protection equivalent to that of the standard for which exemption is requested. This process establishes one means by which DOE can conduct oversight to ensure that its contractors actively implement and comply with DOE/OSHA asbestos requirements. Even if the field organization and its contractors otherwise act in good faith or with good intent to carry out mandatory OSHA standards, without proper oversight, the proper course of action for achieving environmental protection, safety, and health for their employees cannot be assured.

2. We have clarified this statement. According to the National Institute of Occupational Safety and Health's May 23, 1988, report, the objective of the assessment was to review the contractors' operating asbestos abatement policies and to compare these policies with the Institute's policy

and OSHA standards. While the Institute concluded, based on its evaluation of updated versions of the contractors' operating policies, that the asbestos abatement program at Hanford is very good, it also concluded that it believed the asbestos workers should be protected from excess risk, provided that the contractors adhere to their written policies. The Institute's industrial hygienist who performed the assessment of Hanford's asbestos abatement program told us on April 18 and May 2, 1988, that the objective of his technical assessment was not to review Hanford's asbestos program to determine whether it complied with the revised OSHA regulations. He said that the Institute was not an enforcement agency. Consequently, we did not include a copy of the Institute's assessment in the report, as suggested by DOE.

3. The results of our review of asbestos operations at the tank farms provide evidence for the accuracy of our statement that "... because asbestos levels generally were not monitored, the amount of exposure these workers received is unknown." Although DOE argues that the service contractor monitored employees' exposure to asbestos, we found that of the six asbestos jobs that occurred at the tank farms as of October 20, 1987, five were not monitored. In addition, on the basis of our review of the health services contractor's reports, we determined that employees who were not wearing the maximum amount of respiratory equipment and had exposures that exceeded the action level were not always monitored on a daily basis. Therefore, in these cases the employers could not necessarily be assured that the monitoring results represented the employees' exposure. We also found that the health services contractor's reports do not always document the required factors so that comparable-job comparisons can be made for historical reference. Further, although DOE/RL believes that employees have not been overexposed because hands-on work was performed by trained, certified asbestos workers, two tank farm operators told us they have been directly involved in packaging asbestos wastes during asbestos jobs.

We do not believe that, without having performed monitoring or having objective data or monitoring results for similar jobs, DOE/RL is in a position to say that employees were not and have not been overexposed. Without monitoring results, employers cannot know for sure whether workers are using effective engineering and work practices.

---

# Major Contributors to This Report

---

Resources,  
Community, and  
Economic  
Development Division,  
Washington, D.C.

Keith O. Fultz, Senior Associate Director (202) 275-1441  
Emi Nakamura, Evaluator-in-Charge  
Abby Spero, Writer-Editor

---

Seattle Regional Office

Leonard Dowd, Regional Assignment Manager  
Barbara Billinghamurst, Site Senior  
Stan Stenersen, Editor





---

Requests for copies of GAO reports should be sent to:

U.S. General Accounting Office  
Post Office Box 6015  
Gaithersburg, Maryland 20877

Telephone 202-275-6241

The first five copies of each report are free. Additional copies are \$2.00 each.

There is a 25% discount on orders for 100 or more copies mailed to a single address.

Orders must be prepaid by cash or by check or money order made out to the Superintendent of Documents.