

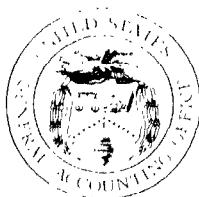
GAO

Report to the Chairman, Subcommittee
on Toxic Substances, Environmental
Oversight, Research and Development,
Committee on Environment and Public
Works, U.S. Senate

May 1991

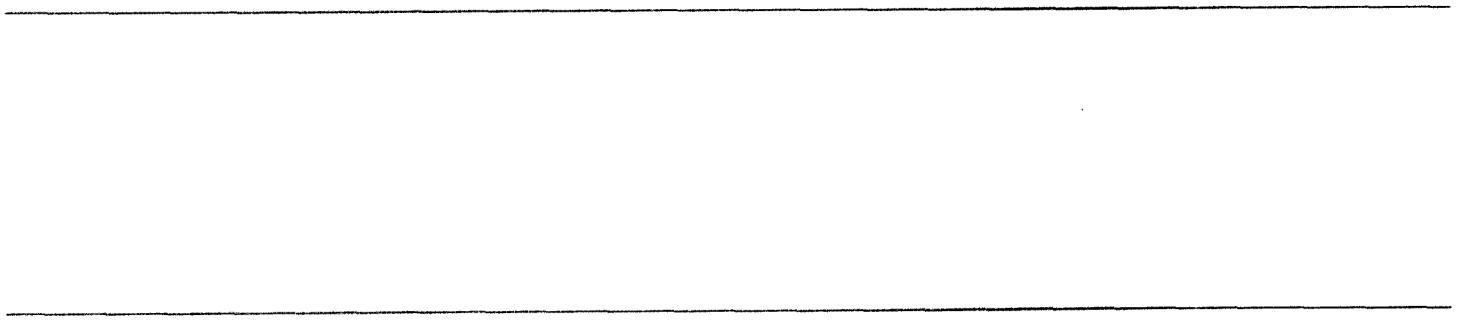
ASBESTOS

EPA's Asbestos Accreditation Program Requirements Need Strengthening



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Resources, Community, and
Economic Development Division

B-243339

May 9, 1991

The Honorable Harry M. Reid
Chairman, Subcommittee on Toxic
Substances, Environmental Oversight,
Research and Development
Committee on Environment and Public
Works
United States Senate

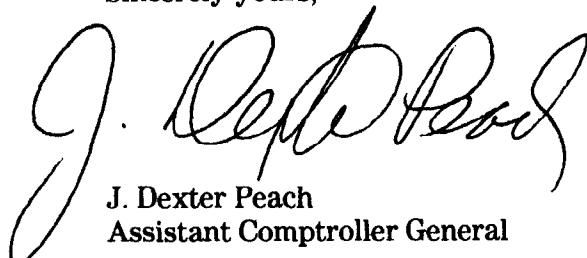
Dear Mr. Chairman:

This report responds to your request for information concerning the training and accreditation of asbestos personnel. As agreed, we (1) determined the status of state accreditation programs and (2) assessed the adequacy of the Environmental Protection Agency's (EPA) Model Accreditation Plan as evidenced by schools' experiences with asbestos abatement.

As arranged with your office, unless you publicly announce its contents earlier, we plan no further distribution of this report until 30 days from the date of this letter. At that time, we will send copies to the Administrator, EPA, and to other interested parties and make copies available to others upon request.

This report was prepared under the direction of Richard L. Hembra, Director, Environmental Protection Issues, who may be contacted at (202) 275-6111. Major contributors are listed in appendix I.

Sincerely yours,



J. Dexter Peach
Assistant Comptroller General

Executive Summary

Purpose

Airborne asbestos fibers are known to cause lung cancer and other respiratory diseases. The Environmental Protection Agency (EPA) currently estimates that about 30,000 schools and over 700,000 public and commercial buildings across the country contain asbestos in a condition that could result in the release of asbestos particles into the air. Estimates for removal of asbestos from all buildings range from EPA's estimate of over \$53 billion to other estimates as high as \$160 billion.

The effectiveness of federal regulations in protecting children and other building occupants from unnecessary exposure to asbestos fibers has raised nationwide concern. As a result, the Chairman, Subcommittee on Toxic Substances, Environmental Oversight, Research and Development, Senate Committee on Environment and Public Works, requested that GAO examine (1) the status of state accreditation programs and (2) the adequacy of EPA's Model Accreditation Plan as evidenced by schools' experiences with asbestos abatement.

Background

In October 1986, the Asbestos Hazard Emergency Response Act (AHERA) directed EPA to develop regulations that would require school systems to inspect school buildings for asbestos-containing materials, develop management plans for dealing with damaged asbestos, and implement appropriate abatement responses. AHERA further required that EPA establish a model accreditation plan for asbestos abatement personnel who work in schools and that all states adopt an accreditation program for training in five asbestos disciplines: inspector, management planner, project designer, supervisor, and worker.

EPA has established a model plan and is helping the states to develop accreditation programs. The plan establishes minimum training and examination requirements for each discipline. Under AHERA, the state programs must be in compliance with the model plan and be established by July 1989 at the latest. However, EPA does not have the authority to penalize states for failing to adopt accreditation programs or to ensure that the state programs comply with its model plan.

In November 1990, legislation was enacted extending accreditation requirements to asbestos abatement personnel working in public and commercial buildings. As a result, the demand for accredited asbestos personnel will increase. The law also calls for increasing the number of hours of training required for asbestos abatement workers and allows EPA to make other changes to its program.

Results in Brief

Over a year and a half after all the states should have adopted an accreditation program as required by AHERA, GAO found that 31 states had adopted some type of program for all five asbestos disciplines. Although EPA's review and approval of state programs is not mandatory, 18 states have voluntarily obtained EPA's approval for all five disciplines. Mandatory approval of all state programs by EPA for all five disciplines would help assure the public that the state accreditation programs comply with the minimum requirements of EPA's model plan.

GAO identified a number of problems with school inspections, management plans, and abatement efforts, which state and local officials believed were linked to limited education and inexperience in the asbestos abatement work force. However, EPA's model plan contains no education or experience requirements. GAO believes that existing requirements for training need to be strengthened and that education and experience requirements may need to be added to the model plan before requirements are extended to workers in public and commercial buildings under the 1990 legislation.

Principal Findings

Status of State Accreditation Programs

States had to establish a state accreditation program by July 1989 at the latest. Forty-seven states have some type of accreditation program for asbestos abatement personnel and three states do not have a program. Thirty-one states have adopted an accreditation program for all five disciplines. States can also voluntarily request that EPA review and approve their programs. EPA has reviewed and approved the complete accreditation programs for all five disciplines for 18 states and has approved partial programs for another 8 states.

AHERA originally required that asbestos abatement personnel working in school buildings be certified under an accredited asbestos program. The 1990 law expanded this requirement so that on or after November 28, 1991, most personnel involved in asbestos abatement activities in public and commercial buildings must also be certified under an accredited program. Therefore, the importance of states establishing accreditation programs that meet minimum federal standards has increased. GAO believes that a revised deadline for establishing state programs is needed, along with enforcement authority for EPA, to ensure that the deadline is met.

This enforcement authority could be combined with incentives, such as grants or technical assistance to the states.

Strengthening Existing Accreditation Requirements Is Favored

Some school systems have experienced problems with asbestos abatement at all stages, from the first inspection through the completion of abatement actions. School officials in some school districts questioned the capabilities and experience of the asbestos work force and expressed support for increasing the training and experience required for accreditation in the asbestos industry. The State of New Jersey performed a quality assurance audit of management plans and found that some management plans failed accurately to identify areas with asbestos-containing material. Some of these deficiencies, according to New Jersey, have been attributed to an inexperienced work force.

Representatives of state agencies and industry groups generally agree that EPA's model plan requirements do not adequately ensure qualification of accredited asbestos professionals in their particular disciplines. These officials believe that while asbestos training is essential, hands-on experience and other education should also be required for accreditation. Even though EPA's model accreditation plan does not contain specific requirements for education and experience, some states have included such elements in their programs.

Recommendation

To ensure the availability of qualified and experienced individuals to perform asbestos abatement activities properly, GAO recommends that the Administrator, EPA, assess the need for requiring individuals working in the asbestos professions to meet prequalification and experience standards. This assessment should be performed in conjunction with the revision of training requirements mandated by the 1990 law extending the accreditation program to public and commercial buildings.

Matters for Congressional Consideration

To ensure that each state's asbestos accreditation program is designed in accordance with EPA's model program and covers at least all five EPA disciplines, the Congress should consider requiring EPA approval of state accreditation programs, providing incentives to the states to assist them in starting programs, and setting a new deadline for the states to establish accreditation programs.

Agency Comments

GAO discussed the factual information in this report with responsible EPA officials. These officials agreed with the facts presented, and their views have been incorporated in the report where appropriate. As requested, GAO did not obtain official agency comments on the report.

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Abbreviations

ACM	asbestos-containing materials
AHERA	Asbestos Hazard Emergency Response Act
ASHAA	Asbestos School Hazard Abatement Act
EAD/OTS	Environmental Assistance Division, Office of Toxic Substances
EPA	Environmental Protection Agency
GAO	General Accounting Office
NAC	National Asbestos Council
NCSL	National Conference of State Legislatures

Introduction

Airborne asbestos fibers have been shown to cause lung cancer and other respiratory diseases. About 30,000 schools and over 700,000 public and commercial buildings across the country contain friable asbestos (asbestos that can be crumbled or reduced to powder by hand pressure). Asbestos in this condition may pose difficult abatement problems and can adversely affect the health of building occupants. Removal of asbestos from buildings could cost over \$53 billion, according to Environmental Protection Agency (EPA) estimates; however, other estimates range up to \$160 billion. These estimates do not include the costs of managing asbestos-in-place.

What Is Asbestos?

Asbestos is a naturally occurring mineral found in deposits throughout the world. Canada, the Soviet Union, and South Africa are the primary sites of commercial production, but asbestos is also commercially mined, to a limited degree, in the United States. When mined and processed, asbestos is typically separated into very thin fibers. Because these fibers are so small and light, they remain in the air for many hours if they are released from asbestos-containing materials (ACM), and they may then be inhaled by people in buildings.

Asbestos became a popular commercial product that was used in public, commercial, and school buildings because it is strong, will not burn, resists corrosion, and insulates well. In the United States, its commercial use began in the early 1900s and peaked between World War II and the 1970s.

EPA and others distinguish between friable and nonfriable forms of ACM. If disturbed, both kinds can release fibers into the air that may be inhaled by building occupants, thus posing a potential health risk. However, friable ACM is thought to release fibers into the air more readily than nonfriable ACM. The fibrous or fluffy asbestos materials sprayed on the surfaces of many buildings for fireproofing, insulating, or decorative purposes are generally considered friable. Some materials, like vinyl asbestos floor tiles, are likely to emit few airborne fibers unless subjected to sanding or cutting operations.

ACM in buildings usually can be classified in the following categories:

- surfacing material: ACM sprayed or troweled onto surfaces, such as decorative plaster on ceilings or acoustical ACM on the underside of concrete slabs or decking, or fireproofing materials on structural members.

- thermal system insulation: ACM applied to pipes, boilers, tanks, and air conditioning and heating ducts to prevent heat loss or gain, or condensation.
- miscellaneous ACM: Including asbestos-containing ceiling or floor tiles, textiles, and other components, such as asbestos-cement panels, asbestos siding, and roofing materials.

Four alternative abatement techniques or options are currently used to prevent or reduce the release of asbestos fibers in schools and other buildings: (1) an operations and maintenance plan, (2) encapsulation, (3) enclosure, and (4) removal. An operations and maintenance plan involves periodic reinspection of ACM that is in good condition. Encapsulation involves sealing asbestos with tape or other sealants to prevent the release of friable materials. Enclosure involves dropping ceilings or installing new material to cover asbestos. Removal involves taking ACM out of the building in such a manner as to prevent disturbance of asbestos fibers or their release into the air.

Health Problems Caused by Asbestos

Asbestos fibers can cause serious health problems. If inhaled, they can cause diseases that disrupt the normal functioning of the lungs. Three specific diseases—asbestosis (a fibrous scarring of the lungs, which makes breathing progressively more difficult and can lead to death), lung cancer, and mesothelioma (a cancer of the lining of the chest or abdominal cavity, which almost never occurs without exposure to asbestos and is currently incurable)—have been linked to asbestos exposure. These diseases do not develop immediately after inhalation of asbestos fibers: Symptoms may not appear for 20 years or more.

In general, the more asbestos fibers a person inhales, the more he or she risks developing an asbestos-related disease. Thus far, most of the severe health problems resulting from asbestos exposure have been experienced by workers who held jobs in industries such as shipbuilding, mining, milling, and fabricating, where they were exposed to high levels of asbestos in the air. These employees worked directly with asbestos materials on a regular basis and for long periods of time. Currently, concern is growing for the health and safety of construction, renovation, and building maintenance personnel, who may be exposed periodically on the job to elevated levels of asbestos fibers.

The International Symposium on the Health Aspects of Exposure to Asbestos in Buildings, held by Harvard University's Energy and Environmental Policy Center in August 1989, concluded that removal of

asbestos materials, if done improperly, may actually increase health risks not only to removal workers, but also to building occupants. The symposium discussed concerns for maintenance and utility personnel whose occupations place them in close physical contact with ACM that may be disrupted.

According to EPA, asbestos removals, by their nature, tend to elevate the airborne level of asbestos fibers. EPA states that a removal operation can actually increase rather than decrease the risk of asbestos-related disease unless all safeguards are properly applied. When ACM is properly managed, release of asbestos fibers into the air is prevented or minimized, and the risk of asbestos-related disease can be reduced to a negligible level.

In recent years a number of studies have been performed on low-level exposure to asbestos and its threat to human health. A study published in Science entitled Asbestos: Scientific Developments and Implications for Public Policy (Jan. 19, 1990) concluded that low-level exposure to asbestos is not a threat to human health. It also concluded that removal often puts more asbestos into the air and that some types of asbestos are far more dangerous than others. According to the study, the safest type—chrysotile—is used almost exclusively in U.S. buildings.

EPA holds that all types of asbestos fibers are equally hazardous to human health. Although available evidence suggests that exposure to chrysotile asbestos may be less likely to cause some asbestos-related diseases than exposure to other types of asbestos, a number of scientific organizations, including the National Academy of Sciences, maintain that chrysotile is a human carcinogen and that breathing airborne chrysotile fibers can cause all three of the asbestos-related diseases.

Federal Legislation and Regulations

In October 1986, the Asbestos Hazard Emergency Response Act of 1986 (AHERA), P.L. 99-519 was enacted into law. The act's provisions include directing EPA to establish rules and regulations on (1) identifying, (2) evaluating, and (3) controlling ACM in schools.

Under AHERA, schools must use accredited persons to conduct inspections, develop management plans, and design or conduct response actions. The act required EPA to develop a Model Contractor Accreditation Plan to ensure a qualified asbestos abatement work force nationwide. EPA developed the plan in April 1987 and made it effective June 1, 1987. The model accreditation plan was developed in consultation with

public health professionals, state and school officials, union representatives, and others as part of EPA's AHERA-negotiated rulemaking in early 1987. The plan's major provisions were discussed and considered during this regulatory negotiation. The plan establishes (1) minimum training requirements for asbestos management planners, inspectors, project designers, supervisors, and workers, (2) standards for examinations, (3) requirements for refresher training courses, and (4) requirements for states to decertify accredited personnel. The plan further recommends that the states establish qualification and/or experience requirements and reciprocal arrangements with other states for honoring other state programs. The plan also lays out the procedure that states must follow to receive EPA approval of their state contractor accreditation programs.

In November 1990, legislation was enacted extending EPA's accreditation program to include persons doing asbestos abatement work in public and commercial buildings.¹ Under the new law, any person who inspects, designs, or conducts a response action on or after November 28, 1991, must be accredited to work in public and commercial buildings.² The law also directs EPA to revise its model plan to increase the number of hours of training required for asbestos abatement workers and allows EPA to make other changes to its program.

EPA issued final AHERA regulations, which became effective on December 14, 1987. The regulations require that all public and private elementary and secondary schools (K-12) inspect for both friable and nonfriable asbestos, submit management plans to state governors or designated agencies, and implement response actions. Schools were given until October 12, 1988 (unless they requested a deferral to May 9, 1989), to submit required management plans to their state's governor or appropriate state agency. States had 90 days to approve or disapprove each plan submitted. Management plans were required to go into effect on or before July 9, 1989. As of December 1989, EPA determined from the states that approximately 92 percent of all public school districts and private schools had completed their asbestos inspections and developed management plans for their school buildings.

AHERA regulations also require surveillance and reinspection every 6 months to monitor any ACM left in schools. In addition, schools must have an accredited inspector reinspect and reassess the condition of any

¹The Asbestos School Hazard Abatement Reauthorization Act of 1990, Public Law 101-637, amended both AHERA and the Asbestos School Hazard Abatement Act of 1984.

²EPA may extend this date for up to 1 year.

remaining ACM every 3 years and determine whether the condition of the materials requires a new response.

Schools that fail to conduct inspections, knowingly submit false information to their state agencies or governors, or fail to develop a management plan in accordance with the regulations can be assessed a civil penalty under AHERA of up to \$5,000 for each day the school is in violation. AHERA provides that civil penalties assessed and collected from a local education agency will be used by that agency to comply with AHERA requirements. Any of these penalty monies not spent after compliance by the affected education agency will be deposited into the Asbestos Trust Fund and made available for further asbestos abatement activities. AHERA, as amended, also authorizes EPA to take enforcement action against contractors who lack the proper training and certification to engage in abatement activities.

Schools that have previously conducted inspections consistent with AHERA and have determined that no ACM is present in the schools will be exempted from the reinspection requirements. In addition, a school built after October 12, 1988, is exempt if an architect, project engineer or accredited inspector certifies that no ACM has been specified for use in construction documents.

Federal Support for Technical Assistance and Accreditation Programs

EPA has administered a wide variety of programs to assist states and schools with their asbestos programs and to help them conduct asbestos abatement projects. EPA began an asbestos technical assistance program in 1979 to improve technical guidance for addressing potential asbestos hazards in buildings, to enhance state program capabilities, and to enlarge the number and quality of certified asbestos professionals. Under the program, EPA develops and distributes technical guidance to improve the quality of asbestos identification, assessment, and abatement activities, and promotes a better understanding of the asbestos risk to the public. EPA's regional offices also provide considerable state-by-state counseling to establish and improve state accreditation programs.

This program also supports state asbestos programs through grants and technical assistance. Under this program, EPA started giving grants to the states in 1985 for the following programs:

- From 1985 through 1987, EPA gave \$2.6 million to states to help them establish a certification program.

-
- In 1986 EPA initiated a number of state support activities with the National Conference of State Legislatures (NCSL).
 - In 1988 EPA gave \$1 million to 17 states to begin AHERA inspector accreditation programs.
 - In 1990 EPA gave \$1.4 million to 23 states to develop state program capabilities for asbestos hazard control.

EPA also supplied seed funding from 1985 to 1988 to create a network of five self-sustaining university information and training centers and four satellite centers to provide training courses in the five asbestos disciplines and information on asbestos and abatement activities.

EPA officials in the Environmental Assistance Division (EAD), Office of Toxic Substances (OTS), said that EPA developed model courses for training asbestos inspectors, management planners, contractor/supervisors, and workers. These courses can be used by any training provider. The officials said they should complete a project designer model course in 1991.

In addition, funds were provided for school abatement projects when the Asbestos School Hazard Abatement Act (ASHAA) was enacted in August 1984. Under ASHAA, EPA established a program to provide funds to financially needy public and private schools districts for asbestos abatement projects. The funds are limited to abatement projects deemed necessary to reduce the risk to school children and/or school employees of inhaling asbestos fibers released by damaged friable asbestos. Funds were awarded to schools with serious asbestos problems and demonstrated financial need. Under ASHAA, assistance may take the form of either a grant or an interest-free loan, or some combination of both. About \$40 million a year have been provided to schools under this program.

Objectives, Scope, and Methodology

The Chairman, Subcommittee on Toxic Substances, Environmental Oversight, Research and Development, Senate Committee on Environment and Public Works, asked us to review the training and accreditation of asbestos personnel. The specific objectives of our review were to

- determine the status of state accreditation programs, and
- assess the adequacy of EPA's Model Accreditation Plan as evidenced by schools' experiences with asbestos abatement.

We performed our work at EPA headquarters and at EPA Regions in New York (II), Philadelphia (III), and Chicago (V). In Illinois, New Jersey, New York, Ohio, and Pennsylvania, we interviewed state officials who were directly involved with the implementation of AHERA. Our purpose was to determine the extent of each state's accreditation program and the degree to which it differs from EPA's model plan, as well as each state's rationale for any variations from EPA's model plan.

To determine what the Congress expected from EPA in developing an asbestos program for schools, we reviewed pertinent legislation and EPA's policies and procedures, as well as documents relating to the accreditation of abatement personnel and the treatment of asbestos under different conditions. We also attended EPA's Public Policy Dialogue meetings on asbestos in public and commercial buildings to obtain the views of the asbestos industry, building owners, insurance companies, unions, and public interest groups. We interviewed various representatives of these groups.

To determine the status and content of accreditation programs in all 50 states, we reviewed an NCSL study of state asbestos programs. NCSL has a cooperative agreement with EPA to perform this study annually. We also discussed this study with NCSL and EAD/ORS officials to better understand how the states were progressing in establishing accreditation programs and to learn which states have received accreditation from EPA for their programs.

We interviewed a representative of the National Asbestos Council, Inc. (NAC), and reviewed the Council's Model Plan for Reciprocity among states. We also interviewed EPA officials in the Economics and Technology Division, Office of Toxic Substances, about the results of their forthcoming AHERA-evaluation study.

To determine the adequacy of the EPA's Model Accreditation Plan, we administered a questionnaire to 45 school districts (9 in each state) in Illinois, New Jersey, New York, Ohio, and Pennsylvania. We conducted 15 in-person and 30 telephone interviews. At each school district we interviewed the official responsible for asbestos abatement activities. Through our questionnaire we gathered information about each district's asbestos abatement history, including information about the district's relationship with management planners, project designers, and abatement firms.

To select the sample of school districts in each state, we reviewed EPA Region II, III, and V inspection files identifying school districts that had recently abated asbestos, and we obtained directories of school districts and samples of press coverage of districts abating asbestos. We did not use a statistically valid sample in selecting the districts for review, and we did not project our findings to the universe of public and private schools. Rather, we selected a cross-section of school districts on the basis of their size, urbanization, geographic location, and receipt of federal asbestos funding.

Our work was performed between August 1989 and March 1991 in accordance with generally accepted government auditing standards. We discussed the factual information contained in this report with responsible officials at EPA. These officials agreed with the facts presented, and their views have been incorporated in the report where appropriate. As requested, however, we did not obtain official agency comments on the report.

Accreditation Programs Have Not Been Established for All States

Variation exists among the states in implementing EPA's Model Accreditation Plan. AHERA required that states adopt an accreditation program at least as stringent as the plan, and, according to EPA, states should have adopted a plan by July 1989 at the latest. Forty-seven states have some type of accreditation program for some asbestos professionals, and 31 of these states have programs for all five disciplines—inspector, management planner, project designer, supervisor, and worker. Three states do not have any type of accreditation program.

Although not required by AHERA or the model plan, a voluntary program was established by EPA to approve state accreditation programs. As of March 1, 1991, 26 states have EPA-approved programs for either two or five of the disciplines. Of these 26 states, 18 have EPA approval for all five disciplines. Approval by EPA of all state programs would ensure that each state's plan is at least as stringent as EPA's model plan.

EPA Model Accreditation Plan Acts as Guidance to States

AHERA requires that all states adopt an accreditation program at least as stringent as the EPA Model Accreditation Plan, but AHERA also permits the states to develop more stringent accreditation program requirements. In keeping with legislative requirements, according to EAD/OTS, the states should have adopted a plan by July 1, 1989, at the latest.¹ However, the law does not authorize EPA to impose a penalty or take any other enforcement action against a state that fails to adopt a plan. According to the Deputy Director, EAD/OTS, EPA has used various forms of technical and financial assistance to promote compliance.

EPA's Model Accreditation Plan sets specific training and examination requirements for the following five asbestos disciplines: inspector, management planner, project designer, contractor/supervisor, and worker. Persons in each of these disciplines perform different tasks and are required to meet different training requirements; however, neither the plan nor AHERA requires experience or education prerequisites for the five asbestos disciplines. Inspectors identify and assess the ACM's condition. Management planners use the data gathered by inspectors to assess the ACM's hazard, determine appropriate response actions, and develop a schedule for implementing response actions. Abatement project designers determine how to conduct the asbestos abatement work, while asbestos abatement contractors, supervisors and workers carry out the

¹AHERA provides that each state must adopt its plan "within 180 days after the commencement of the first regular session of the legislature of such State which is convened following the date on which the Administrator completes development of the model plan." AHERA, sec. 206(b)(2), 15 U.S.C. sec. 2646(b)(2).

abatement work. Training requirements for the various disciplines are shown in table 2.1.

Table 2.1: Length of Initial Training Courses for Accreditation Under EPA's Model Plan

Course	Length of training^a
Inspector ^b	3 days
Management planner ^b	Inspector course plus 2 days
Abatement project designer	3 days
Abatement contractor and supervisor	4 days
Abatement worker	3 days

^aA day of training equals 8 hours, including breaks and lunch.

^bThese two courses are usually offered consecutively in a single week.

Source: EPA Model Accreditation Plan.

In addition to taking a course, an individual seeking accreditation in a particular discipline must pass an examination. To retain the accreditation, the individual must take an annual refresher course. Inspectors must take a half-day refresher course while persons in all other disciplines must take a full-day course to have their accreditation extended for a year. For refresher training, no examination is specifically required. The model plan also requires that the states include conditions and procedures for decertifying accredited individuals in the five disciplines. However, the plan does not specify how or under what conditions an individual should be decertified. The plan leaves these decisions to each state's discretion.

Although the model plan does not establish prerequisites, it recommends that the states, in adopting an accreditation program, require prequalifications and experience that they consider appropriate for some or all disciplines. The following include some of the plan's suggested requirements:

- An inspector may possess a high school diploma or an associate's degree in a particular field (e.g., environmental or physical sciences).
- A management planner and an abatement project designer may be a registered architect, engineer, or certified industrial hygienist.

States Take on Accreditation Responsibility

According to EAD/OTS officials, EPA began to approve training courses for the five disciplines upon adopting the model plan in June 1987. Then, because AHERA required EPA to turn the program over to the states, the officials said that EPA stopped approving new courses after October 15, 1989. Some states had already received EPA approval for their program, and EPA felt that their actions would prompt the other states to establish similar programs conforming to EPA standards. Providers wishing to give new courses must now receive approval for the course from the states in which they will be teaching the course.

States may seek approval of their state accreditation programs by submitting the following information to EPA:

- a copy of the legislation establishing the state's accreditation program (if applicable),
- a copy of the state's accreditation regulations, and
- a letter to EPA clearly indicating how the state meets the program requirements of the EPA Model Accreditation Plan.

EPA then reviews this documentation to determine whether the state's accreditation requirements are at least as stringent as those of the EPA model. EPA will approve the state's program for the disciplines that meet or exceed the model plan's criteria. After a state receives approval of its accreditation program, any training courses approved by that state in the accredited disciplines are considered EPA-approved courses for the purposes of accreditation.

Status of State Accreditation Programs

Forty-seven states have some type of accreditation program for some asbestos professionals. Thirty-one of these states have programs for all five disciplines. Even though, according to EPA officials, AHERA established a July 1989 deadline for all states to adopt an accreditation program for all five disciplines, three states do not have any type of accreditation program.²

Neither AHERA nor the model plan required EPA to establish a program to approve state accreditation programs. Furthermore, neither the law nor the plan required states to obtain EPA approval of their programs. However, EPA established a voluntary approval program to (1) ensure that

²AHERA required the states to adopt an accreditation plan at least as stringent as EPA's model plan. Because the model plan covers five disciplines, a program equivalent to the model plan must also cover all five disciplines.

the states meet the standards set in the model plan, (2) promote public recognition of approved state programs, and (3) encourage reciprocity among the states. As of March 1, 1991, 26 states have EPA-approved programs for either two or five of the disciplines. Of these 26 states, 18 have EPA approval for all five disciplines. Table 2.2 identifies each state's type of accreditation program. A U.S. map presented in figure 2.1 shows which states have an EPA-approved program for either five, two, or none of the disciplines. EPA is working with the states in a variety of ways to help them develop their programs and obtain final EPA approval. EPA does not have the authority to penalize a state for not adopting a plan.

Chapter 2
Accreditation Programs Have Not Been
Established for All States

Table 2.2: State Accreditation Programs

State	Course				
	Worker	Contractor Supervisor ^a	Project Designer	Inspector	Management Planner
Alabama	E	E	E	E	E
Alaska	E	E			
Arkansas	E	E			
Arizona ^b					
California ^c					
Colorado	E	E	E	E	E
Connecticut	S	S	S	S	S
Delaware	E	E	S	S	S
Florida	S	S	S	S	S
Georgia			S		
Hawaii ^d	S	S			
Idaho	S	S	S	S	S
Illinois	E	E	E	E	E
Indiana	E	E	E	E	E
Iowa	E	E	E	E	E
Kansas	E	E			
Kentucky	S	S	S	S	S
Louisiana	S	S		S	S
Maine	E	E	E	E	E
Maryland ^e	S	S	S	S	S
Massachusetts	E	E	E	E	E
Michigan	E	E	E	E	E
Minnesota	E	E			
Mississippi	S	S	S	S	S
Missouri	S	S	S	S	S
Montana	E	E	E	E	E
Nebraska	E	E	E	E	E
Nevada	S	S	S	S	S
New Hampshire	S	S			
New Jersey	E	E			
New Mexico ^c					
New York	E	E	E	E	E
North Carolina ^d					
North Dakota	E	E	E	E	E
Ohio	S	S	S	S	S
Oklahoma	S	S	S	S	S
Oregon	E	E			
Pennsylvania ^b					

(continued)

Chapter 2
Accreditation Programs Have Not Been
Established for All States

State	Course			
	Worker	Contractor Supervisor ^a	Project Designer	Management Planner
Rhode Island	E	E	E	E
South Carolina	S	S	S	S
South Dakota	E	E	E	E
Tennessee ^c				
Texas	S	S		
Utah	E	E	E	E
Vermont	S	S	S	S
Virginia	E	E	E	E
Washington	E	E		
West Virginia	E	E	E	E
Wisconsin	E	E	E	E
Wyoming ^b				

Note: Accreditation programs identified by an (E) are EPA-approved as of March 1, 1991. Data for programs identified by an (S) are as of April 1990, the date of NCSL's most recent study of state programs. These programs are run by the state and are not EPA-approved.

^aAlthough EPA has named the course Contractor/Supervisor, only the supervisor (a person) is required to take the course and pass an examination.

^bThis state has no accreditation program.

^cThis state requires the individual or entity (contractor) seeking licensure/certification to demonstrate completion of an EPA-approved training course.

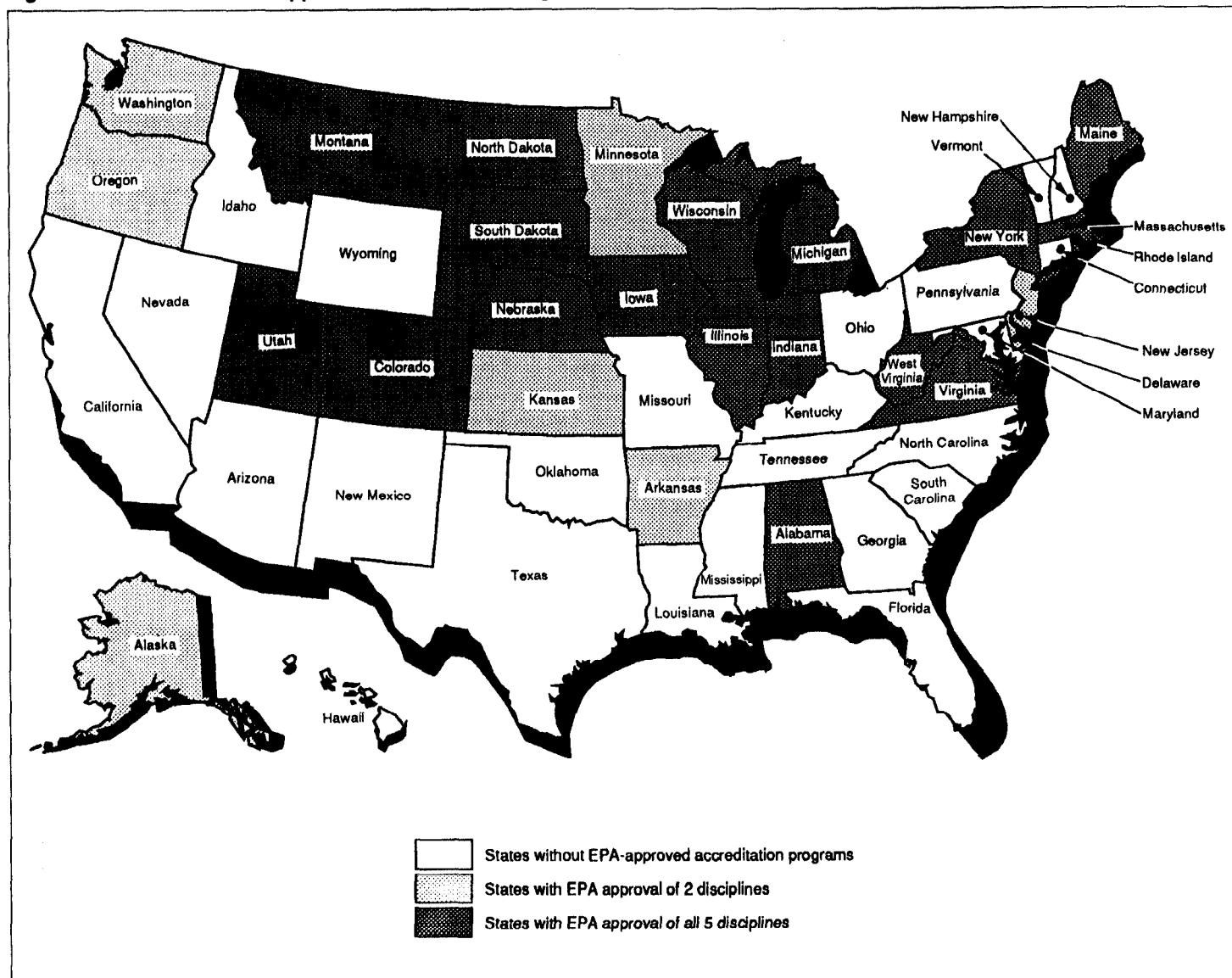
^dThis state has passed legislation requiring accreditation but has not yet promulgated rules and/or regulations implementing the program, or further information was not available. Elements indicated are anticipated.

^eThis state has received conditional approval of its program from EPA. Its program will receive full approval once it develops and adopts final implementing regulations.

Source: GAO analysis of data from EAD/OTS, EPA, and NCSL.

Chapter 2
Accreditation Programs Have Not Been
Established for All States

Figure 2.1: States With EPA-Approved Accreditation Programs as of March 1, 1991



Source: Environmental Assistance Division, Office of Toxic Substances, EPA.

Twenty-one states have accreditation programs that meet some state accreditation requirements but have no part approved by EPA. Three states—Arizona, Pennsylvania, and Wyoming—have no accreditation or certification program.

Under AHERA, persons must be accredited to inspect public and private school buildings for asbestos, develop management plans, and design or conduct response actions. Such persons can be accredited either directly by states that have implemented EPA-approved state accreditation programs, or by completing an EPA-approved training course and passing an examination for the course. As of November 1991, persons conducting asbestos-related work in public and commercial buildings, other than those developing management plans, will also have to be accredited to work in these buildings. To handle this increased volume of work in every state, a properly trained and qualified asbestos workforce must be available.

States' Program Requirements Vary

We found that some state accreditation requirements are more stringent than those of EPA's model program. For example, 27 states require pre-qualifications for accreditation. However, these prequalifications, which may include education or experience, vary among the states. Some states require inspectors, management planners, and project designers to meet formal education requirements (e.g., to be registered architects, engineers or certified industrial hygienists). For supervisors, some states require on-the-job experience or apprentice experience. For workers, a few states have age requirements.

In Illinois, we found that the requirements for inspectors, project designers, and supervisors are more stringent than the model plan's. Inspectors must have 6 months' experience in the asbestos abatement area before they can be accredited because Illinois believes that a training course alone does not suffice as preparation for performing inspections. Project designers must also meet management planner requirements (5 additional days of training—3 as inspectors and 2 as management planners) because they work closely with inspection reports and management plans.

In addition to the five disciplines specified in the model plan, Illinois has certification requirements for two other disciplines—third party monitor and air sampler. A third party monitor must meet the same training requirements as a supervisor but must also have 3 months' experience on-site as a supervisor on abatement projects or 1 year's experience in building construction. The air sampler must complete a 40-hour training course and have experience in air sampling to receive state certification. An Illinois state official said that the state certifies these additional disciplines because both are critical to a quality abatement job. Illinois also

issues a photo identification card to a qualified applicant who has submitted a certificate of successful completion of the required courses, an application to be certified, and any other required documentation, such as transcripts or architectural licenses.

Conclusions

Forty-seven states have some type of asbestos accreditation program. Of these, 31 have an accreditation program for all five disciplines—inspector, management planner, project designer, supervisor, and worker. AHERA requires that the state programs meet the standards of EPA's model program and be established within a certain time frame. According to EPA, AHERA required all states to adopt an accreditation program for all five disciplines by July 1989. The act did not give EPA any enforcement authority in the event that the states did not comply with the deadline, and it did not require EPA to ensure that state programs were in compliance with EPA's model plan. However, EPA does review and approve state plans through a voluntary program. As of March 1, 1991, EPA had approved programs for all five disciplines for 18 states and programs for two disciplines for 8 states.

Recent legislation extended accreditation requirements from persons involved in abatement work in about 30,000 of the nation's schools to persons working in over 700,000 public and commercial buildings. To handle this increased volume of work in every state, a properly trained and qualified asbestos work force must be available. The cornerstone for ensuring adequate preparation of this work force is the state certification program. The current system does not ensure that state programs meet EPA's model accreditation program standards unless states voluntarily seek EPA review and approval of their programs. The current system also has no mechanism for taking action against states that do not comply with the act's deadline. EPA mandatory approval of all state programs for all five disciplines would help ensure that these accreditation programs meet the requirements of EPA's model plan, as required by AHERA.

Since half the states have decided that EPA's review and approval of their certification is in their interest, we believe that such approval should be required of all states to assure the public that such plans meet the act's requirements. To hasten compliance, we believe a new deadline should be established and EPA should be given authority to enforce it. This enforcement authority could be combined with incentives, such as increases in grant funds or technical assistance to cooperating states.

Matters for Consideration by the Congress

To ensure that each state's asbestos accreditation program is designed in accordance with EPA's model program and covers at least all five EPA disciplines, the Congress should consider requiring EPA approval of state accreditation programs, providing incentives to the states to assist them in starting programs, and setting a new deadline for the states to establish accreditation programs.

Improvements Needed in EPA's Asbestos Model Accreditation Program

In response to AHERA, EPA developed a Model Contractor Accreditation Plan that calls for an accredited work force to address the asbestos problem in our nation's schools. The model plan establishes minimum training requirements for accreditation in five asbestos disciplines. However, the plan does not require any work experience or education prerequisites for accreditation in the various disciplines.

Representatives of state agencies and industry groups generally agree that the plan's requirements do not adequately ensure qualification of accredited asbestos professionals in their particular disciplines. These officials believe that while asbestos training is essential, hands-on experience and other education should also be required for accreditation. As states develop accreditation programs, some are either adding disciplines or increasing requirements for asbestos professionals.

The experience gained by schools in their asbestos abatement programs further demonstrates that the EPA model plan requirements need strengthening. School officials whom we contacted questioned the capabilities of the asbestos work force, citing problems with the quality of initial inspections and supervision of the work. Similar problems were identified by the state of New Jersey in its evaluation of school districts' management plans.

State and Industry Officials Believe Accreditation Improvements Needed

State and industry officials believe that accreditation requirements need to be strengthened generally to include education and experience. Some states have already added disciplines or increased requirements for those working in the asbestos field. Additionally, under a cooperative agreement with EPA, the National Asbestos Council, Inc. (NAC) is working to standardize accreditation requirements and examinations.

States Develop Additional Asbestos Disciplines and More Stringent Requirements

Most state officials we spoke with believe that current EPA model plan requirements cannot guarantee that asbestos workers possess the necessary technical capabilities to effectively detect, control, and remove asbestos in buildings. As a result, states have added disciplines or increased requirements for those working in the asbestos field, as the following examples show:

- New Jersey has established an asbestos safety technician discipline to improve monitoring and inspection of asbestos abatement projects. Asbestos safety technicians provide continuous oversight and ensure compliance with state and federal regulations. Requirements for this

position include at least 2 years of college in academic sciences or 1 year of experience in environmental activities plus successful completion of the worker/supervisor and technician training courses. New Jersey has also increased requirements for the supervisor discipline to include a minimum of 6 months' hands-on experience as an asbestos worker. Technicians, supervisors, and workers must take a state-sponsored examination to qualify for a New Jersey license.

- New York has added an allied trades discipline to certify plumbers, electricians, and other tradespeople who encounter asbestos on a limited or emergency basis. New York also accredits air sampling technicians to ensure proper monitoring of air quality at project sites. The state developed this additional discipline because EPA's model plan does not require accreditation or training for this function and the state felt that workers in this discipline would ensure proper oversight of the project's air quality. New York also requires that all project designers for school abatement projects costing more than \$5,000 be accredited architects or engineers.
- Illinois has strengthened its certification requirements for asbestos inspectors to include 6 months' prior experience in the asbestos abatement area.

In addition, we found that several local and county governments have their own accreditation programs based on EPA's model plan. These governments have either added asbestos disciplines or imposed additional requirements. For instance, Philadelphia, Pennsylvania, requires that an asbestos project inspector perform visual and air clearance monitoring for all major asbestos projects in the city. The asbestos project inspector must have employment experience in asbestos and must successfully complete a 30-hour training course. Likewise, New York City requires that an asbestos investigator inspect all buildings before renovation or demolition. The training and experience requirements for this additional discipline differ from those of the EPA inspector discipline. The asbestos investigator must have at least 5 years' work and/or educational experience in a related field. According to the city's Director, Department of Training and Certification, the absence of prerequisites for the EPA inspector discipline greatly influenced the city's decision to develop a new discipline and expand requirements.

**National Asbestos Council
Develops Standard
Accreditation Procedures**

To foster reciprocity among states, NAC is working to develop a national registration program patterned after those for other professionals, such as engineers, architects, and industrial hygienists, through a cooperative agreement with EPA. EPA's model plan also recommends that states establish a program for reciprocity. Specifically, this voluntary program provides a two-tier plan. The baseline level, or lower level, requires completing an AHERA course and passing an NAC standardized national examination. The national examination requirement would apply to all five EPA disciplines plus a project monitor discipline and would serve as the major vehicle for reciprocity. In addition to these baseline requirements, the upper tier requires specific accreditation, verified experience, and formal education. These upper tier requirements are as follows:

- Inspectors must have a bachelor's degree in engineering, architecture, industrial hygiene, science, or a related field, with at least 6 months' asbestos experience; or a 2-year associate's degree with 12 months' experience; or a high school degree with at least 24 months' experience.
- Management planners must have a bachelor's degree in a related field with at least 6 months' asbestos experience.
- Project designers must meet the requirements of management planners and have additional experience in project design.
- Supervisors must have a high school diploma, at least 6 months' experience as an asbestos abatement worker, and at least 12 months' experience as an asbestos abatement supervisor.

The program also establishes the asbestos abatement project monitor as a sixth discipline. The project monitor conducts on-site inspections of asbestos abatement projects for quality assurance purposes. The qualifications for this discipline are the same as for the inspector, plus the successful completion of an EPA-approved asbestos supervisor course.

According to NAC, the national registration program is meant to complement existing state programs and assist states that are working to develop accreditation programs. NAC certification, not required under federal law, is intended to raise standards of professionalism in the asbestos control industry through voluntary participation by states and industry professionals. In addition, NAC believes the program will provide the states with a pool of highly qualified and NAC-accredited workers available for work in all types of buildings. The plan would also make it easier for qualified workers to work in other states without repeating their training. NAC held its first national examinations for inspectors, management planners, and project designers in New Orleans

in February 1991. The first examinations for supervisors, workers, and project monitors will be given in April 1991.

Problems Cited With EPA's Model Plan Requirements

Some school officials whom we contacted support increased training and experience for workers or professionals in the asbestos industry. School officials questioned the experience of the current work force, citing problems with initial inspections and abatement work performed, and they expressed their belief that increased training and experience would have prevented some of these problems. Those officials who participated in AHERA training added that experience should also be required for certification.

School District Officials Believe Inspectors and Management Planners Need More Experience

Some school district officials believe that the AHERA requirement to inspect schools created a tremendous demand for inspectors and resulted in a number of inexperienced individuals entering the work force. Although inspectors were EPA-accredited, many had no understanding of engineering and building systems. As a result, 18 of the 45 school asbestos officials whom we spoke with felt that their management plans were only generally accurate, and 3 officials felt their management plans were inaccurate. These school districts were correcting their plans.

Our interviews with school officials revealed that some inspectors misclassified the condition of the asbestos-containing material (ACM), inaccurately listed the square footage, or failed to identify the precise location of asbestos.

- In a school district in New York, inspectors misclassified the condition of 15,766 square feet of surface ACM and 1,563 linear feet of thermal pipe insulation. The inspectors identified the material as friable and damaged when, in fact, it was in good condition and did not warrant removal.
- A school district in Pennsylvania believed that the asbestos inspectors hired by its management planning firm were inexperienced and could not accurately measure square footage. A school official stated that different inspectors measured identical buildings and classrooms and reported vastly different amounts of ACM.
- In several other school districts, officials stated that their management plans did not precisely locate the asbestos. In one district, an asbestos coordinator told us that the plan also failed to indicate what areas containing asbestos needed attention first.

Some school officials believe that these problems might have been avoided if the model plan's prequalification requirements for inspectors and management planners had been increased. Some suggested that requirements include a minimum educational level for management planners, and experience in heating, ventilation, and cooling systems for inspectors.

School District Officials Believe Training Is Insufficient

Although school district officials are not required to participate in AHERA training, many of the officials in our survey chose to take at least one AHERA training course. Of the 45 school officials we spoke to, 31 had completed at least one EPA-approved training course, and 27 of these 31 officials had completed the inspector/management planner training. While the majority felt that the training was adequate, they also believed that the training course alone could not adequately prepare them for the management planning profession. In fact, one school district official stated that after taking the course he realized that he lacked the experience necessary to prepare his district's management plan. Several officials noted that a construction, engineering, or electrical background is extremely important and should be required for both inspectors and management planners.

School District Officials Believe Supervisors Need More Experience

Some school district officials reporting problems with the quality of asbestos abatement work believe that better on-site supervision is needed to ensure that workers perform abatement tasks properly. The school officials believe that supervisors need more experience than workers and that supervision is the key to good work.

Of the 45 local education agency officials in our survey, only 10 said they were totally satisfied with the quality of their abatement projects. Twenty-eight officials were generally satisfied, three officials said they were less than satisfied, and four officials were neither satisfied nor dissatisfied.

Although most of the school officials were at least generally satisfied, they nevertheless reported problems. For example, several said that workers did not fully understand the health risks associated with asbestos and sometimes endangered themselves by removing protective clothing, including respirators, in the containment area. In other cases, contractors failed to supply an adequate number of asbestos workers to perform asbestos abatement projects, thereby creating project delays and increasing costs. Additionally, some school officials reported that

contractors did not have enough experience. In one case, the contractor did not realize that the solution he was using to remove asbestos floor tile would ultimately damage replacement tiles. In another case, the contractor broke a gas line, causing the gas company to shut the building and significantly delaying the completion of the job.

The officials believe that these work practices could have been avoided if the model plan had required more extensive experience, such as an apprenticeship period for supervisors or more hands-on training. Two officials added that an on-site supervisor, independent of the contractor, could also help to prevent problems.

One State Identified Problems With Management Plans

New Jersey performed a quality assurance audit of approximately 130 management plans to determine its schools' compliance with the AHERA mandate. The state's audit disclosed that some management plans failed to accurately identify areas with asbestos-containing material. For instance, during the visual inspection of school buildings, inspectors found areas with asbestos not identified in the management plan. The most commonly missed material included firedoors, gasket materials, hatches and storage areas. According to the state's Director, Asbestos Control Service, some of these deficiencies are attributable to an inexperienced work force.

EPA Is Studying the Adequacy of School Inspections

EPA is currently evaluating the AHERA program to assess how well the current program is working in schools and to develop information for formulating a program to address asbestos in public and commercial buildings. The evaluation covers six different areas: (1) the adequacy of school building inspections, (2) the usefulness of management plans, (3) the appropriateness of response actions, (4) the evaluation of AHERA inspectors, (5) the responses of parents and teachers to notifications of asbestos in schools, and (6) the evaluation of training for maintenance workers and custodians.

The evaluation is based on a national statistical sample of approximately 200 schools in 30 communities. For example, to assess the adequacy of school building inspections, EPA hired expert inspectors to reinspect the 200 schools. These inspectors are determining whether the original inspectors found ACM in the schools, assessed it properly, determined its location, and took the correct number of samples for analysis. EPA is currently completing the work and evaluating the data and expects to publish the results in late spring 1991.

Extending Accreditation Requirements to Nonschool Buildings

The health hazard posed by improper asbestos abatement and the vast number of buildings containing potentially friable material underscore the need for an experienced and qualified work force. As a result, emphasis has been placed on accrediting asbestos professionals who work in all public and commercial buildings, not just in schools. In November 1990, legislation was enacted extending EPA model plan requirements to asbestos professionals working in public and commercial buildings. The legislation also increases the minimum number of training hours required for accreditation. The legislation will now require accreditation for asbestos professionals working in all types of buildings.

Beginning in May 1989, EPA sponsored a series of eight Public Policy Dialogue meetings on issues related to asbestos policy in public and commercial buildings. While the participants, who represented building owners, realtors, mortgage bankers, insurers, unions, manufacturers, contractors, and consultants, did not reach agreement on their entire agenda, they did generally concur that stronger training requirements and a reciprocity program would improve the quality of asbestos work performed. EPA is now considering policy and program options to address the recommendations of the dialogue participants.

Conclusions

While EPA's 1987 Model Contractor Accreditation Plan has helped to improve the quality of the nation's asbestos work force by establishing training requirements, it did not establish educational prerequisites or work experience requirements for the various asbestos disciplines. We identified a number of problems with school inspections, management plans, and abatement efforts that state and local officials believe were linked to limited education and inexperience in the asbestos abatement work force. Some state officials believe that education and experience requirements are needed to ensure that asbestos professionals possess the technical capabilities to effectively detect, control, and remove asbestos in buildings, and they have developed accreditation programs that are more stringent than EPA's model plan. New Jersey, for example, has instituted a 6-month experience requirement for supervisors.

Our findings highlight the need for improvements in EPA's model plan to ensure that accredited professionals possess the education and experience required to perform asbestos abatement work safely and effectively. This need is especially critical in light of the Congress' passage of legislation extending the accreditation requirements to workers involved in asbestos abatement projects in all buildings.

**Recommendation to
the Administrator,
EPA**

To ensure the availability of qualified and experienced individuals to perform asbestos abatement activities properly, GAO recommends that the Administrator, EPA, assess the need for requiring individuals working in the asbestos professions to meet prequalification and experience standards. This assessment should be performed in conjunction with the revision of training requirements mandated by the 1990 law extending the accreditation program to public and commercial buildings.

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