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United States
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EPA

Asbestos Fact Book



Dear Reader:

Asbestos is everybody's problem. It poses an environmental problem that in one form or another confronts every community in the nation. This *Asbestos Fact Book* describes many of the public health issues involving asbestos, and what EPA and others in government are doing to address them. We have tried to deal with the difficult questions involving asbestos as openly and as fully as possible, without editorial comment or judgment.

Asbestos is associated with several serious and often debilitating health problems. Most public concern is understandably focused on the effects to children who are exposed to asbestos in schools. But asbestos is a potential danger for anyone who is directly exposed to it, whether such exposure takes place in the home or the workplace. This is one reason we have added a section outlining basic precautions that should be taken by any person who works with or in the vicinity of asbestos.

The challenges of removing or abating asbestos contamination are complex and formidable, but Federal, state and local governments, with the help of concerned citizens and community leaders, are beginning to make encouraging progress. I feel certain this progress will continue in the years ahead.

This fact book includes addresses and telephone numbers of several EPA offices responsible for asbestos-related activities in Washington and our regional offices. Please contact any of these sources directly if you have further questions about asbestos or the information in this book.

Sincerely,

Lee M. Thomas
Administrator

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Background

Description of Asbestos

Asbestos is the name for a group of natural minerals that separate into strong, very fine fibers. The fibers are heat-resistant and extremely durable, and these qualities have made asbestos very useful in construction and industry. Although there are several different types of asbestos, nearly 95 percent of all asbestos used in commercial products is a type called chrysotile.

The potential of an asbestos-containing product to release fibers is dependent upon several factors including its location and its degree of friability. Friable means that it can be crumbled with hand pressure and, therefore, is likely to emit fibers when disturbed. The fibrous or fluffy spray applied asbestos materials found in many buildings for fireproofing, insulating, or decorative purposes are generally considered friable. Some materials, such as vinyl floor tiles are less likely to emit airborne fibers unless subjected to sanding or cutting operations.

Between 1900 and 1980, some 30 million tons of asbestos were put in place. Since the 1970s, however, asbestos use has declined significantly. The United States now mines and processes about 200,000 tons of asbestos every year into hundreds of different products.

Identifying Asbestos

Asbestos has been used in a variety of forms. It has been sprayed or trowelled on ceilings, beams, walls, and other structural components of buildings. It was used for thermal, acoustical, and decorative purposes, and to insulate boilers and pipes, as well as many other construction materials and appliances. It is best to assume that a product does contain asbestos if this cannot be determined from the label, the installer, or the manufacturer. EPA has a toll-free number where people can find the names of laboratories qualified to test and analyze samples for asbestos (800-334-8571 ext 6741).

Health Concerns

The physical properties that give asbestos its resistance to heat and decay are linked with several adverse human health effects. Asbestos tends to break into a dust of microscopic fibers. Because of their size and shape, these tiny fibers can remain suspended in the air for long periods of time and can easily penetrate body tissues when inhaled. Because of their durability, these fibers can remain in the body for many years.

Asbestos is known to cause asbestosis and various forms of cancer. *Asbestosis* is a chronic disease of the lungs which makes breathing progressively more difficult, and can lead to death.

Cancer can result from breathing asbestos fibers. *Lung cancer*, the most frequently seen asbestos-caused disease, is apparently made much more likely by smoking. Breathing asbestos also can cause *mesothelioma*, a cancer of the chest and abdominal membranes that causes shortness of breath and pain in the abdomen and walls of the chest. Mesothelioma almost never occurs without exposure to asbestos, and is currently incurable. Other cancers, primarily of the digestive tract, also have been associated with exposure to asbestos.

These diseases have a long latency period — that is, they don't show up until 20 to 40 years after exposure. Right now, for example, we are seeing the results of exposure that occurred among asbestos workers during World War II.

Some people who have been exposed even to very low levels of asbestos for very brief periods have later contracted mesothelioma. Because asbestos fibers remain in the body, each exposure increases the burden of asbestos.

Federal Regulatory Program

Over the last ten years, the U.S. Environmental Protection Agency and several other federal agencies have acted to prevent unnecessary exposure to asbestos by prohibiting some uses and by setting exposure standards in the workplace. Now the government is also acting to limit exposure to the public at large.

Five agencies have major authority to regulate asbestos.

The **Occupational Safety and Health Administration** (OSHA) sets limits for worker exposure on the job.

The **Food and Drug Administration** (FDA) is responsible for preventing asbestos contamination in food, drugs, and cosmetics.

The **Consumer Product Safety Commission** (CPSC) regulates asbestos in consumer products. It already has banned the use of asbestos in dry-wall patching compounds, ceramic logs, and clothing. The CPSC is now studying the extent of asbestos use in consumer products generally, and is considering a ban on all non-essential product uses that can result in the release of asbestos fibers.

The Mine Safety and Health Administration (MSHA) regulates mining and milling of asbestos.

The **Environmental Protection Agency** (EPA) regulates the use and disposal of toxic substances in air, water, and land, and has banned all uses of sprayed asbestos materials. The effects of cumulative exposure to asbestos have been established by dozens of epidemiological studies. In addition, EPA has issued standards for handling and disposing of asbestos-containing wastes.

EPA has a program to help abate asbestos exposure in schools. Since 1982, when EPA issued the Asbestos-In-Schools Identification and Notification Rule, the agency has required all local education agencies to inspect for friable asbestos materials; to notify parents and teachers if such materials are found; to place warning signs in schools where asbestos is found; and to keep accurate records of their actions to eliminate the problem.

Congress passed the Asbestos School Hazard Abatement Act of 1984 to help those schools with the most serious hazards and the greatest financial need. The Act gives EPA the responsibility for providing both financial and technical assistance to local education agencies. Financial assistance, for which Congress has appropriated $50 million, will include grants and loans. These funds will be allocated on the basis of state assigned priorities: the financial resources of the requesting educational agencies; the degree of asbestos exposure; and the efficiency and cost effectiveness of the proposed abatement techniques.

EPA offers technical assistance and guidance on asbestos. Under the TAP (Technical Assistance Program), each of the agency's ten regions has a Regional Asbestos Coordinator backed up by a staff of technical experts (see page 22). Since 1979, the program has provided advice to thousands of school officials and building owners.

EPA has also published several guidance documents that provide state-of-the art guidance on how to identify and control friable asbestos-containing materials (see page 23). In addition, the Agency is beginning the operation of several new programs. These include:

- contractor certification
- 3 pilot information centers
- rules to provide worker protection during asbestos abatement activities
- expanded technical assistance materials.

The details of these programs are covered in the sections that follow.

Key Issues

Asbestos in Schools

Since 1979, EPA has operated a Technical Assistance Program to help schools identify and control airborne asbestos to safeguard the health of an estimated 15 million children and 1.4 million school workers in schools containing friable asbestos. The mere presence of asbestos,however, does not necessarily represent a significant health risk in schools or other buildings. Asbestos only poses a threat when friable material degrades or is destroyed and the asbestos fibers escape into the air and are inhaled.

EPA has not set a standard for asbestos in school as such since conditions and problems must be addressed for each school. The Agency has concluded that each school should be handled on a case-by-case basis to determine the extent of the problems and the best ways for resolving them expeditiously. Removing asbestos is not always the safest or most feasible approach. One of four alternative abatement techniques or options is employed when asbestos is found in schools or other buildings depending on specific conditions found at each individual site. (These are described in detail on page 18.)

All 10 EPA regional offices have Asbestos Coordinators to help schools deal with asbestos problems, conduct training seminars, and give guidance on different alternatives to reduce asbestos exposure. There is a toll-free number where callers can get the names of laboratories that are qualified to test and analyze asbestos samples (800-334-8571, ext. 6741) and another where the general public can get technical assistance (800-424-9065).

Inspection and Notification Rule

In 1982, EPA issued an Asbestos-in-Schools Rule that required all public and private schools to inspect their buildings for friable asbestos containing materials. The schools were to complete this inspection by June 28, 1983. The Rule also required these schools to take samples and have them analyzed for asbestos content, keep records of these transactions, and notify employees and parents if asbestos was found.

School Survey

During January 1984, EPA completed a survey of 2,600 public school districts and private schools to determine compliance with the Asbestos-In-Schools Rule. This survey showed that one third of these 2,600 schools may have asbestos problems, but that two-thirds of these had either taken action to correct the problem or were in the process of voluntarily correcting the problem. Other results from the Survey showed that 93 percent of the 2,600 schools had been inspected but that only 34 percent were in full compliance with all the requirements of the EPA Rule. (Additional schools may now be in compliance.) As of January 14, 1985, EPA has issued 147 civil complaints nationwide, fining school districts a total of $1,333,445 for non-compliance.

Asbestos in Buildings

Asbestos was once considered a health risk only for asbestos workers. It is now known to be a potential hazard to all who are exposed to asbestos fibers in the air they breathe.

Sources of potential exposure to asbestos fibers from asbestos-containing friable materials include those materials sprayed or trowelled onto ceilings, rafters, beams and other structural building parts for fireproofing, insulation, sound-deadening or decoration, or used as pipe and boiler insulation. Friable materials are those that can be crumbled, pulverized or reduced to powder by hand pressure.

Asbestos-in-Building Survey

EPA recently conducted a national survey to determine the extent of asbestos-containing friable material in buildings. The primary objective of the survey was to generate valid national estimates of the number of buildings that have asbestos-containing materials and to integrate the results of the survey in planning the agency's asbestos program.

Major Findings

There are 3.5 million buildings in the United States that are included in one of three classes; Federal Government buildings; private non-residential buildings; and residential apartments. About 700,000 of these buildings (20 percent) contain friable asbestos.

It is estimated that there are 1.2 billion square feet of sprayed-on or trowelled-on asbestos materials, with an average asbestos content of 14 percent, in 190,000 buildings. Buildings built in the 1960s are more likely to have these materials than other buildings. About 550,000 buildings are estimated to have asbestos-containing pipe and boiler insulation with an average asbestos content of 70 percent.

Buildings Surveyed

Inspection teams conducted extensive inspections of 231 buildings which were a statistically representative sample of the 3.5 million buildings in the three classes of buildings noted above (Federal government buildings, private non-residential buildings and residential apartments). The study was conducted in 10 sites (cities or groups of counties) chosen to represent the continental U.S. They were in the vicinities of New Brunswick, NJ; Chicago, IL; Los Angeles, CA; Phoenix, AZ; Kansas City, MO; Darlington Co., SC; Reno Co., KS; New York, NY; Oklahoma City, OK; and Houston, TX

Loan and Grant Program

Congress passed the Asbestos School Hazard Abatement Act in August 1984, and subsequently gave EPA $50 million to assist those schools with the most serious asbestos exposure problems and financial need. The Act authorizes expenditures of $50 million for the program in 1985, and $100 million per year for each of the next five years. Congress has not, however, appropriated these funds.

Non-interest loans, repayable over 20 years, may be awarded for up to 100 percent of an abatement project. Grants may be awarded for up to 50 percent of the cost of a project. Some schools may qualify for both a grant and a loan.

Applications, which were sent to schools in December 1984, must be completed and submitted to Governors who, in turn, are to submit priority lists of candidates to EPA by March 15, 1985. (EPA specialists are available at the toll-free number—800-424-9065—to answer questions about filling out applications.) EPA will determine the eligibility of applicants and begin distributing funds by June 6, 1985, so that schools can conduct abatement activities next summer.

Asbestos in Homes

Where is Asbestos Used in the Home?

Asbestos has been used in a wide variety of products for four basic reasons: (1) to strengthen the product material; (2) for thermal insulation within a product; (3) for thermal or acoustical insulation or decoration on exposed surfaces; and (4) for fire protection.

Vinyl floor tiles and flooring: Asbestos fibers can be released if the tiles are sanded or seriously damaged or if the backing on the sheet flooring is dry-scraped or sanded or if the tiles are severely worn or cut to fit into place. Rather than removing them, the flooring should be covered by new material.

Patching compound and textured paints: The use of asbestos in these products was banned in 1975. Any old products should be discarded. Sanding or scraping old material can release asbestos fibers. To repair damaged material, Safety Guidelines (see next section) should be followed.

Friable Ceilings: Buildings built or remodeled between 1945 and 1978 may contain crumbly, asbestos-laden material in the ceilings. Trained contractors should be hired to remove it or encapsulate the material with a coating.

Stoves and furnaces: Cement sheet material around stoves probably will not release asbestos fibers unless scraped. Paper or millboard poses greater hazards and should be handled according to the safety guidelines. Furnace insulation should be replaced if it is in poor condition with pieces breaking off. The Safety Guidelines (see next section) suggest the proper procedures.

Walls and pipes: If insulation around pipes dated from 1920 to 1972 is damaged, it is usually better to use wide protective duct tape to repair it rather than to try to remove the insulation itself. Wall and ceiling insulation installed between 1930 and 1950 may contain asbestos and, in major renovations or demolitions, should only be handled by trained contractors.

Appliances: Unless broken or misused, most appliances with asbestos are safe to use. Unsafe models have been withdrawn voluntarily from the market by the manufacturers.

Roofing, shingles and siding: Asbestos was used as a binding agent with portland cement in some materials. If it is worn, it may be spray painted to seal in the fibers. To repair or replace it, the Safety Guidelines should be followed.

How Can I Tell if I Have Asbestos in My Home?

The manufacturer of a product may be able to tell you, based on the model number and age of the product, whether or not the product contains asbestos. People who have frequently worked with asbestos (such as plumbers, building contractors, or heating contractors) often are able to make a reasonable judgment about whether or not a material contains asbestos based on a visual inspection.

If I Find Asbestos in My Home, What Should I Do?

In most cases, asbestos-containing materials do not need to be removed. They should be periodically inspected for signs of damage or deterioration and repaired as necessary. When it is necessary to use or work with asbestos-containing materials, reduce your exposure to fibers as much as possible. To help you do this, follow the general Safety Guidelines on the next page. If at all possible, get help from a contractor who is trained and experienced in working with asbestos. Be sure the contractor is familiar with and follows the guidelines for handling asbestos-containing materials. In general, home repair contractors are NOT experienced in the proper procedures for handling asbestos.

Safety Guidelines

If you think that a material contains asbestos, and you have to disturb it, handle it very carefully. Special precautions should be taken during removal or encapsulation of exposed or damaged asbestos-containing material. If possible, find a contractor trained in safe procedures for handling asbestos. The contractor should follow these basic precautions:

1. Do not disturb any material you think may contain asbestos unless you have to. Removal of the material is usually the last alternative.

2. Seal off the work area from the rest of the residence. Plastic sheeting and duct tape may be used. Take great care not to track asbestos dust into other areas of the residence.

3. Always wear an approved respirator. Wear protective gloves, hats, and other protective clothing. If possible, dispose of all of this equipment immediately after using it. If you cannot dispose of your clothing, wash it separately from the family's wash.

4. When working with asbestos-containing material, wet it with a hand sprayer. The sprayer should provide a fine mist, and the material should be thoroughly dampened, but not dripping wet. Wet fibers do not float in the air as readily as dry fibers and will be easier to clean up. The addition of a small amount (about a teaspoon to a quart of water) of a low-sudsing dish or laundry detergent will improve the penetration of the water into the material and reduce the amount of water needed.

5. If you must drill or cut an asbestos-containing material, do the drilling or cutting outside if possible. Wet the material first (see item 4, above).

6. If you must remove the material, avoid breaking it into small pieces. While it is easier to remove and handle small pieces, you are more likely to release asbestos fibers. Pipe insulation was usually installed in preformed blocks; remove these in complete pieces.

7. EPA has regulations concerning asbestos disposal. Place any material you remove and any debris from the work in plastic trash bags and dispose of it in a proper landfill. Call your health department for instructions about how to dispose of this. Take care not to break the bag.

8. After you finish removing the material, thoroughly clean the area with wet mops, wet rags, or sponges. Repeat the cleaning procedure a second time. Wetting will help to reduce the chance that the fibers get spread around. Again, see that no asbestos material is tracked into other areas. If possible, dispose of the mop heads, rags, and sponges in the trash bags with the removed materials. Otherwise, vigorously flush the mop, rag, or sponge in running water in a sink or basin with a drain. Make sure to completely rinse both the utensil and the basin.

9. If you are going to have work done by a contractor, discuss these guidelines and other steps to minimize asbestos exposure.

CAUTION: Do not dust, sweep, or vacuum particles suspected of containing asbestos. This disturbs tiny asbestos fibers and may make them airborne. The fibers are so small that they cannot be seen and can pass through normal vacuum cleaner filters and get back into the air. The dust should be removed by a wet-mopping procedure or by specially-designed vacuum cleaners used by trained asbestos contractors.

Asbestos in Motor Vehicle Brakes

Asbestos is used widely in motor vehicle brakes, and people who work directly on brake maintenance are widely exposed to exceptionally high levels of asbestos. This occurs when brakes are cleaned and serviced during routine maintenance activities. EPA is establishing a Brake Mechanics Program to provide information and education on asbestos problems to vocational/technical students, working mechanics, and brake repair and maintenance specialists. The program will alert these specialists to the presence of asbestos in brakes, and to methods that will minimize the release of asbestos fiber into the workplace.

Asbestos Wastes

EPA and other federal agencies have specific regulations in place regarding asbestos wastes. They cover a period that ranges from the time the wastes are generated to their disposal at a receiving facility.

Generation of Asbestos Wastes

Asbestos-containing wastes are generated by a variety of processes that include:

Mining and Milling: These operations generate large quantities of residual asbestos rocks and tailings. EPA regulations require that these wastes be handled in such a way as to prevent any visible dust emissions. Controls range from wetting down wastes, using exhaust ventilation systems during mining and milling operations, and decontaminating equipment that controls or comes into contact with the wastes.

Manufacturing and Fabricating: Asbestos products are manufactured by combining the milled asbestos with binders, fillers, and other materials. The resultant mixture is typically molded, formed or sprayed and subsequently cured or dried. Manufactured products may then be fabricated for specific uses by another manufacturer, the installer of the product, or the consumer. EPA requires a variety of controls on these wastes. These range from controlling emissions of waste dust, special handling procedures, and warning labels on the proper disposal of the product.

Removal Operations: A significant quantity of asbestos-containing wastes may be generated during the removal of friable asbestos materials from buildings. There are several EPA regulations governing these removal actions. All friable asbestos materials must be removed prior to any demolition. Removal or encap- sulation also is required before the start of any renovation that would disturb the asbestos. EPA and OSHA require several actions during a removal activity. These include enclosing the work areas with barriers, and the installation of air filters and work shower/decontamination facilities. All wastes must be wetted to prevent visible emissions. They must also be containerized and properly labeled. Cleanup of all debris following a removal operation is also required.

Transport of Asbestos Wastes

Transportation begins at the time wastes are hauled away from a generation site and ends when the wastes are actually delivered and unloaded at a disposal site. EPA regulations state only that no visible emissions of the asbestos wastes occur during transport although several other safeguards are also recommended that include:

Recordkeeping: A "chain-of-custody" form that is passed from the generator to the transporter, and ultimately to the person receiving the wastes at a disposal site.

Containers: The use of properly labeled, leak-tight containers for transporting the wastes and instructions on how to handle the wastes during transport.

Vehicles: Options, such as using enclosed carrying compartments or canvas to cover wastes, are recommended for vehicles carrying wastes.

Disposal of Asbestos Wastes

There are EPA regulations governing the disposal of asbestos wastes at active and inactive disposal sites that include:

Site Selection: There must be no visible dust emissions from the site during disposal and a thick covering (at least six inches) of non-asbestos material must be placed over the wastes within 24 hours. Many States and localities have programs for approving and licensing asbestos disposal sites.

Receiving Wastes: A waste hauler must notify a landfill of any load containing asbestos wastes and the load must be inspected by the landfill operator to ensure the wastes are in leak-proof containers and are labeled properly. The landfill operator also is to notify EPA of any suspected fiber releases during disposal. If the wastes are not in proper containers, the landfill operator must keep the wastes wet until they can be covered with a non-asbestos material.

Site Requirements: A facility must establish clearly designated areas and trenches for the disposal of asbestos wastes and safeguards must be instituted to cover the wastes and avoid breakage of the containers. In addition, a 30 inch cover of non-asbestos material must be added to the six inch cover (put on to prevent dust emissions) before the final closure of an area containing asbestos wastes. Proper grading and vegetation must be added to prevent erosion of the wastes.

Other Requirements: EPA also requires other actions to control public access to site areas containing asbestos wastes and requires that facilities provide for proper recordkeeping of asbestos wastes.

Other EPA Efforts

Asbestos Action Program

The Asbestos Action Program, which was established within EPA's Office of Pesticides and Toxic Substances in December 1984, directs and implements all of EPA's nonregulatory asbestos activities.

The program develops guidelines and procedures for dealing with asbestos problems; runs a variety of technical and public information programs; and manages and coordinates asbestos-related activities within EPA and with other government and non-government organizations.

The program staff also will:

- establish information and training centers.
- establish contractor certification programs.

- develop guidelines to identify the most serious asbestos risks in buildings.

- provide assistance to citizens, contractors and others on locating asbestos, recommending abatement actions, and existing health effects data.

- implement the Asbestos School Hazard Abatement Act of 1984, which calls for EPA to provide grants or loans to schools with the most serious asbestos problems that are in the most severe financial need.

- provide guidance to local school agencies and States in completing loan/grant applications.

- coordinate and administer, within EPA and the Department of Education, the review of loan/grant applications, and the award of funds.

- chair work groups for regulations in their early stage of development.

- work with the Consumer Product Safety Commission regarding asbestos in homes, and other Federal Agencies on asbestos- related program.

- chair the Federal Asbestos Task Force.

- develop public information materials.

- coordinate the asbestos programs within EPA.

- More detailed information about these particular projects is included in this section.

Asbestos Information Centers

EPA plans to establish three pilot Asbestos Information and Training Centers to provide information to the public on how to identify and abate asbestos hazards and to educate and train people in proper asbestos identification and abatement techniques. The centers also will serve as clearinghouses, and will distribute general information, guidance documents, and audiovisual materials.

The first center will be located at the Georgia Institute of Technology and will open in the spring of 1985. The other two centers, located at the University of Kansas (Kansas City, KS) and Tufts University (Medford, MA), will open by the summer of 1985.

The centers will sponsor technical symposia and conferences to train people involved in various aspects of asbestos abatement. Three types of training courses will be offered at each center — a one-day general awareness course geared toward the general public (teachers, parents, etc.) — an abatement course for decisionmakers (building owners and managers who must make abatement decisions) to discuss methods for identifying and controlling friable asbestoscontaining materials — and a three-day course designed to provide classroom as well as "hands-on" training for workers and supervisors who are involved in asbestos abatement projects.

Target audiences also will include architects, maintenance personnel, school officials, and abatement contractors. Depending on the success and effectiveness of these pilot centers, EPA may expand the program and establish additional centers in the future.

Contractor Certification Program

EPA is developing a model State contractor certification program to address the problem of inconsistent performance by asbestos abatement contractors. The goal of the program is to ensure that abatement work is performed by qualified professionals who use state-of-the-art techniques and are held accountable for their performance.

State Certification Programs

Each State program is to include uniform certification criteria, standardized training courses, testing for technical knowledge of asbestos and abatement practices, auditing of abatement job performance, and periodic retraining requirements.

EPA'S Approach

EPA's Asbestos Action Program will undertake the following actions to establish a contractor certification program:

- Develop a contractor certification course.
- Develop a model State regulation.
- Provide guidance for State enabling legislation.
- Provide States with materials neces[illegible]an the certification courses.
- Develop a description of an effective State monitoring and oversight process.
- Provide incentives for State participation in the program.

State Demonstration Projects

In order to establish pilot contractor certification programs EPA will select 10-15 States to participate in demonstration projects. Each State that is selected will be provided, on an accelerated basis, the certification courses, the instructors' packages, and the model State regulation. A generic contract with appropriate specifications for asbestos work, and a description of an effective monitoring and oversight process for asbestos projects will also be developed for the projects. The State of Maryland's program has been used as a model for many of these materials. These programs will begin by June 5, 1985.

Worker Protection Standards

There are regulations in effect which protect many workers from asbestos risks. These regulations exist under programs administered and enforced by The U.S. Department of Labor's Occupational Safety and Health Administration (OSHA). Public sector workers and workers in firms with less than 10 employees, however, are not uniformly covered by these OSHA regulations. EPA is examining several options for providing protection to these workers.

These options include:

Protecting Abatement Workers: EPA will determine, by June 1985, whether it is feasible to advance the same kind of protection to all asbestos abatement workers that is currently provided to workers covered by the OSHA regulations. EPA also will be determining whether it has the statutory authority to effect such rules, whether the rules can be implemented effectively, and whether they can pass established government clearance processes.

Work Practices: EPA also is investigating whether it is feasible to promulgate a regulation that would require the establishment of certain procedures and work practices during all asbestos abatement projects to reduce (limit) the exposure of building occupants and workers to asbestos. Again, EPA must determine if it has the authority to apply these rules, and if this approach is the most efficient way to address the potential worker protection problems involved.

Service and Maintenance Workers: EPA also will be instituting a program aimed at limiting the exposure of building service and maintenance personnel to asbestos during normal maintenance activities. In addition, EPA is preparing a document that will provide safety guidance for service and maintenance personnel who may have to deal with asbestos in schools and other buildings. A public information campaign also will be developed that alerts maintenance workers about appropriate work practices to limit their exposure to asbestos during normal maintenance in buildings.

Research

The health effects of asbestos exposure described earlier have been extensively researched and verified. Specific items include ways to abate and handle asbestos once it is discovered in some building or area, the extent to which it presents problems in private homes, and the kinds of materials that can serve as safe substitutes.

Abatement and Handling Techniques: Four alternative abatement techniques or options are currently used to prevent or reduce the release of asbestos fibers in schools and other buildings. They include:

an operations and maintenance plan involving periodic reinspection of asbestos-containing materials which are in good condition. This is the best alternative for undamaged materials.

encapsulation, which involves sealing asbestos with tape or other sealants to prevent the release of friable materials.

enclosure by dropping ceilings or installing new walls to cover asbestos.

removal of the asbestos by trained professionals in a manner which prevents disturbance of asbestos fibers or their release into the air.

It currently is unclear how effective each of these techniques is under a variety of different situations or when different building materials are involved. Information is needed in this regard to ensure the safest and most cost effective remedies for handling asbestos hazards in buildings. EPA is conducting research in this area.

Homes: At present no one knows the extent to which asbestos in private homes presents a potential hazard. CPSC is conducting a survey of homes. EPA's technical assistance program can help private homeowners ascertain what they can do to address the problem.

Substitutes: Various materials are in use that serve as substitutes for asbestos. These include cellulose, natural wool, fiberglass, and other spray-applied insulation materials. EPA is in the process of developing programs to investigate and assess the safety and suitability of these substitutes.

Appendices

Chronology of Major Federal Actions

*See Glossary for definition of acronyms used in this chronology.

Occupational Standards

OSHA	6/72	"permanent standard: for occupational exposure of 5 f/cc, to be lowered to 2 f/cc in 1976
OSHA	10/75	proposed lowering standard to 0.5 f/cc
OSHA	7/76	2 f/cc standard became effective
NIOSH	12/76	recommended OSHA lower the standard to 0.1 f/cc
MSHA	3/76	2 f/cc standard in coal mines
MSHA	11/78	2 f/cc standard in metal and nonmetallic mines (includes sand, gravel & crushed stone operations)
OSHA	11/83	ssued emergency temporary standard (ETS) of 0.5 f/cc
OSHA	11/83	ETS stayed pending legal arguments by asbestos industry
OSHA	3/84	ETS overturned in Federal District Court

Air Emissions

EPA/NESHAP	3/71	asbestos listed as a hazardous air pollutant
EPA/NESHAP	4/73	"no visible emissions" standard for milling and manufacturing of asbestos products and demolition of buildings — prohibited spray application for most uses of friable materials containing more than 1% asbestos
EPA/NESHAP	10/75	waste collection and disposal included under the no visible emissions standard — added several processing industries to those already covered
EPA/NESHAP	6/78	extended prohibition to cover all uses of friable spray-on material and no visible emissions standard to cover all friable asbestos-containing materials during demolition
U.S. Supreme Court	1/78	decision in the Adamo Wrecking Co. case ruled that EPA did not, prior to the 1977 Clean Air Act amendments, have the authority to impose work practice requirements, thus invalidating those parts of the NESHAP regulations which are not emissions standards
EPA/NESHAP	7/83	proposed reinstatement of these provisions

Asbestos-in-Schools

EPA	3/79	through the OTS, EPA initiated a technical assistance program to help schools identify and control friable asbestos-containing materials
EPA/TSCA	9/79	ANPR on asbestos-containing materials in schools
EPA/TSCA	9/80	proposed rule on identification and notification of friable asbestos-containing materials in schools
U.S. Dept of Education	9/80	under the Asbestos School Hazard Detection and Control Act, proposed a rule to establish a grant and loan program to reimburse schools for detecting and controlling friable asbestos-containing materials in schools
U.S. Dept of education	1/81	final rule — funds have not been appropriated to conduct this program
EPA/TSCA	5/82	final rule on identification and notification of friable asbestos-containing materials in schools
EPA/TSCA	2/83	EPA granted a substantial part of a Section 21 petition from the Service Employees Intl Union to commence regulatory action on schools and buildings asbestos abatement
EPA	8/84	under the Asbestos School Hazard Abatement Act of 1984, administers a loan and grant program to help schools elimiate asbestos hazards

Commercial Use of Asbestos

CPSC	12/77	rules prohibiting use of asbestos in consumer patching compounds and emberizing agents
EPA/TSCA	10/79	ANPR with CPSC announcing intent to consider regulations of commercial uses of asbestos
EPA/TSCA	12/79	ANPR modification
EPA/TSCA	9/80	proposed rule under Section 8(a) to require reporting of production and exposure data on asbestos
EPA/TSCA	7/82	final rule under Section 8(a) to require reporting of production and exposure data on asbestos

Water Emissions

EPA/FWPCA	2/74	effluent guidelines for asbestos manufacturing point sources and new source performance standards

Waste Disposal

EPA/RCRA	5/80	asbestos listed as a hazardous waste in proposed rule
EPA/RCRA	11/80	when issuing interim final rules on portions of the disposal regulations, EPA stated it would "temporarily defer" promulgation of the listing of asbestos while investigating the extent to which NESHAP facilities afford comparable protection

Other Actions

DOT	8/79	rule to require controls during transportation of friable asbestos
FDA	3/75	rule to prevent release of asbestos from filters used for some drugs
FDA	1/76	rule to revoke permission to use the electrolytic diaphragm process for salt

Glossary

ANPR	Advanced Notice of Proposed Rulemaking
CPSC	Consumer Product Safety Commission
DOT	Department of Transportation
f/cc	fibers per cubic centimeter
FDA	Food and Drug Administration
FWPCA	Federal Water Pollution Control Administration (became part of EPA)
MSHA	Mine Safety and Health Administration
NESHAP	National Emission Standard for Hazardous Air Pollutants
NIH	National Institutes of Health
NIOSH	National Institutes for Occupational Safety and Health
OSHA	Occupational Safety and Health Administration
RCRA	Resource Conservation and Recovery Act
TSCA	Toxic Substances Control Act

Asbestos Contacts

EPA Region 1
JFK Federal Building
Boston, MA 02202
(617) 223-0585

EPA Region 2
Woodbridge Avenue
Edison, NJ 08837
(201) 321-6668

EPA Region 3
Curtis Bldg
6th and Walnut Streets
Phila, PA 19106
(215) 597-9859

EPA Region 4
345 Cortland Street
Atlanta, GA 30365
(404) 881-3864

EPA Region 5
230 S. Dearborn Street
Chicago, IL 60604
(312) 886-6003

EPA Region 6
First International Bldg
1219 Elm Street
Dallas, TX 73270

EPA Region 7
726 Minnesota Avenue
Kansas City, KS 66101
(913) 236-2835

EPA Region 8
1860 Lincoln Street
Denver, CO 80295
(303) 837-3926

EPA Region 9
215 Fremont Street
San Francisco, CA 94105
(415) 974-8137

EPA Region 10
1200 6th Avenue
Seattle, WA 98101
(206) 442-2632

Toll-Free Numbers

Toll-Free Numbers

EPA 800-334-8571 ext 6741	For names of labs qualified to test and analyze asbestos samples
EPA 800-424-9065	Where general public can get technical assistance
EPA 800-424-9065	Where schools can get help in filling out grant/loan applications
CPSC 800-638-2772	For information on asbestos in consumer products or homes

Information Materials

Fact Sheets

Asbestos in Schools

Discusses EPA's regulation requiring all private and public schools to inspect for asbestos, federal loans/grants available to help schools abate asbestos problems, methods for remedying asbestos problems, and kinds of technical assistance EPA can provide to schools. Includes list of EPA Regional Asbestos Coordinators and a list of available publications about asbestos.

Asbestos

General information about asbestos, its possible health effects, ways to remedy asbestos problems, and where to go for help.

Technical Documents

Asbestos-Containing Materials in School Buildings: A Guidance Document, Part 1 - March 1979

Part 1 of this two-part guidance package is written for school officials and outlines steps that schools can take to conduct an asbestos control program.

Asbestos-Containing Materials in School Buildings: A Guidance Document, Part 2 - March 1979

This part of the package contains more detailed information on asbestos identification and control methods. Part 2 is primarily for school personnel, contractors, and others involved in actual asbestos inspection and control work.

Guidance for Controlling Friable Asbestos-Containing Materials in Buildings - March 1983

This document serves to: 1) provide a summary of data on exposure to airborne asbestos; 2) identify issues in establishing an asbestos control program; 3) review technical issues confronted when assessing the potential for exposure in indoor settings; 4) provide information on alternative remedial actions; 5) suggest a process for selecting a particular course of action; and 6) discuss criteria for determining successful asbestos control.

Slide Show

Training Material for Use with EPA's 1983 Asbestos Guidance Document

Consists of thre parts; graphic materials on 35 mm slides (55 slides), a companion set of discussion points on cards, and a text. The presentation is designed to take between 45 and 60 minutes and a question and answer period is suggested as a follow-up.