

U.S. Environmental Protection Agency

Asbestos Project Plan

November 2005

Introduction

Asbestos is the name given to a number of naturally occurring fibrous minerals with high tensile strength, the ability to be woven, and resistance to heat and most chemicals. Because of these properties, asbestos fibers have been used in a wide range of manufactured goods, including roofing shingles, ceiling and floor tiles, paper and cement products, textiles, coatings, and friction products such as automobile clutch, brake and transmission parts. Exposure to asbestos can be harmful to human health if asbestos fibers are released into the air when asbestos is disturbed or in poor condition, and these fibers are inhaled into the lungs. Asbestos exposure has been associated with a number of serious health problems and diseases, including asbestosis, lung cancer, and mesothelioma.

For more than three decades, many federal agencies have been overseeing the regulation of asbestos products, wastes, and emissions. Existing Environmental Protection Agency (EPA) regulations address asbestos risks from non-household products that contain asbestos; point source emissions from facilities where these products are manufactured; and sites where environmental contamination poses a risk to local populations (outside of the workplace). These regulations are promulgated under several environmental statutes.¹

Other federal agencies also address asbestos.² For example, the Occupational Safety and Health Administration (OSHA) regulates worker safety and the National Institute for Occupational Safety and Health (NIOSH) conducts related research

and monitors asbestos exposure through workplace activities. The U.S. Geological Survey and the Mine Safety and Health Administration (MSHA) monitor and regulate asbestos-related mining activities. The Consumer Product Safety Commission (CPSC) regulates asbestos in consumer products. The National Institute of Standards and Technology accredits laboratories that test for the presence of asbestos fibers.

EPA and other federal organizations manage a number of issues related to asbestos, such as asbestos contamination and related clean-up and health assessment efforts at a number of sites across the U.S. To help focus its efforts, the Agency convened a Blue Ribbon Panel of technical and policy experts in the asbestos field, called the Asbestos Focus Group, to offer the Agency recommendations and options on effective asbestos regulatory, outreach and education approaches. The panel's *Asbestos Strategies* report offers ten short- and long-term recommendations for setting priorities. For more detail on the panel's recommendations, several of which are adopted in this Project Plan, see Appendix, p.14. In addition, various information and research needs have been identified as a result of the Agency's renewed focus on asbestos. EPA developed this Project Plan to provide an overview of the various ongoing and planned activities, involving multiple EPA programs and regions, to address many of these issues.

This Asbestos Project Plan provides a framework for a coordinated Agency-wide approach to

identify, evaluate and reduce the risk to human health from asbestos exposure. As the Agency obtains new information, it may take additional appropriate steps as needed to address asbestos exposure and reduce risk to the public.

¹The primary statutes include the Toxic Substances Control Act (TSCA), the Clean Air Act (CAA), the Asbestos Hazard Emergency Response Act (AHERA), the Asbestos School Hazard Abatement Reauthorization Act (ASHARA), the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), and the Emergency Planning and Community Right to Know Act (EPCRA).

²OSHA has regulatory authority under the Occupational Safety and Health Act; CPSC, under the Federal Hazardous Substances Act; and MSHA, under the Federal Mine Safety and Health Act.

Background

In 1989, EPA finalized the Asbestos Ban and Phaseout Rule, which would have banned all but a few uses of asbestos. However, much, but not all, of this ban was vacated (reversed) by the U.S. Court of Appeals for the Fifth Circuit in 1991. As a result, in the 1990s, EPA's asbestos program focused primarily on implementing the Asbestos Hazard Emergency Response Act (AHERA), the Asbestos School Hazard Abatement Act (ASHAA), and the asbestos National Emission Standards for Hazardous Air Pollutants (NESHAP) under the Clean Air Act.

EPA implements AHERA through the Asbestos-Containing Materials in Schools Rule (1987) which requires public and nonprofit private schools to develop asbestos management plans, inspect school buildings for asbestos, provide asbestos training to custodial and maintenance workers and other school employees, follow standards for school building operations and maintenance activities, and implement appropriate response actions to asbestos hazards in schools. EPA also developed a model accreditation plan (MAP) for states pursuant to AHERA. States have adopted and administered asbestos accreditation programs for asbestos abatement professionals who do work in all public and commercial buildings, including schools, based on the MAP.

ASHAA, passed by Congress in 1984, established a loan and grant program to assist schools in abating asbestos hazards in their buildings. In 1990, Congress reauthorized the ASHAA loan and grant program, directed EPA to increase the

number of training hours required for abatement worker accreditation under the MAP, and extended the accreditation requirements to cover asbestos abatement projects in all public and commercial buildings and schools. Funding for the loan and grant program ended in 1995.

EPA's NESHAP for asbestos was first promulgated in 1973 and has been amended several times, with the most recent substantive amendment in 1990. The asbestos NESHAP regulates asbestos mills, asbestos product manufacturing, building demolition and renovation, fabricating, insulating materials, waste disposal and the conversion of asbestos into non-hazardous materials (vitrification). The rule establishes work practice standards and sets the emissions limit at "no visible emissions." Regulated asbestos-containing material is defined by the NESHAP as containing more than 1 percent asbestos. The NESHAP does not regulate asbestos mines, because they are under the authority of the Mine Safety and Health Administration, nor does it regulate asbestos as a contaminant.

The EPA asbestos worker protection rule (WPR) extends OSHA-like worker protection requirements to state and local government employees performing asbestos abatement projects not covered by an OSHA-approved state plan. OSHA regulates asbestos and protects workers under both its general and construction standards. Employees who are covered under the EPA asbestos WPR include asbestos abatement professionals, employees performing building operations

and maintenance projects and automotive brake and clutch repair.

More recently, EPA's Superfund program has been conducting an extensive cleanup and health assessment effort in Libby, Montana, where asbestos contamination associated with a now-closed vermiculite mining operation was discovered. The asbestos contamination found in Libby raised broader concerns about asbestos-contaminated vermiculite products, including vermiculite attic insulation (VAI) and horticultural products. In response to these concerns, EPA conducted vermiculite horticulture studies in 2000 and a limited study of VAI in six homes in 2002. The VAI study raised questions about the ability of existing test methods to detect asbestos fibers in disturbed VAI and the possibility of false negative test results. As a result, in 2003, EPA launched a consumer awareness campaign about asbestos contaminated VAI.

As part of its effort to address asbestos related issues comprehensively, EPA is working with other federal agencies and, through its regions, with state and tribal representatives to ensure that there is appropriate coordination among government agencies.

EPA is committed to providing accurate and timely public health information and is continuing to address concerns about asbestos. To assist the public in obtaining relevant information about asbestos issues, EPA has a toll-free hotline (1-800-471-7127). In addition, the Agency posts detailed information about asbestos issues on its web page at www.epa.gov/asbestos. The Agency also will post information on the activities contained in this Project Plan on its asbestos website.

Key EPA Asbestos Activities

The Agency has identified three key areas for focus:

1. Improving the state of the science for asbestos;
2. Identifying and addressing exposure and risk reduction opportunities associated with asbestos in products, schools and buildings; and
3. Characterizing and reducing asbestos exposures through assessment and cleanup.

OBJECTIVE 1

Improving the State of the Science for Asbestos

EPA and other federal organizations are currently addressing a number of asbestos-related issues – from products that may be contaminated with asbestos (such as VAI) to health effects and fiber characteristics. EPA efforts to advance science have encompassed a wide variety of activities across the agency, and include basic research, analytical methods development, field sampling, training and education, scientific conferences, medical and epidemiologic studies, and enhancement of approaches to understanding the health risks stemming from exposure. Additionally, EPA is working with its federal partners (Centers for Disease Control and Prevention, Mine Safety and Health Administration, Occupational Safety and Health Administration, U.S. Geological Survey,

National Institute for Occupational Safety and Health, etc.) to identify data gaps, inconsistencies between approaches and policies, and opportunities to collectively advance scientific and public health goals in this area.

As part of the effort to improve the state of the science on asbestos and to protect human health, EPA has several specific activities.

Activities to advance EPA's understanding of asbestos toxicology and dose-response assessment

- The Agency is currently updating the Integrated Risk Information System (IRIS) file for asbestos and has started work updating the non-cancer assessment. This assessment will include current information on the toxicity and risk for the non-cancer effects. Also included in the IRIS assessment will be information obtained from a June 2003 workshop on asbestos mechanisms of toxicity that reviewed the most recent state of the science. It is projected to be completed by 2008.
- The asbestos IRIS file currently contains a cancer assessment. EPA may in the future update this assessment.
- Currently, validation of a transmission electron microscopy (TEM) analysis is being conducted on a South Carolina textile plant to better characterize historical asbestos exposures.

- A study is planned that will better characterize historical asbestos exposures from the Quebec, Wittenoom, and Libby mines.
- Data files from the 1980s containing quantitative analytical TEM characterizations of exposures, in vivo doses, and physical-chemical properties for more than 40 mineral and synthetic fiber samples used in both EPA and international asbestos effects research studies will be recovered and organized.

Activities to improve EPA's understanding of exposures related to vermiculite attic insulation

- EPA is developing procedures for identifying the presence of asbestos in vermiculite and VAI. It is expected that these efforts will have practical applications for homeowners concerned about the presence of asbestos in VAI.
- A research method to detect asbestos in bulk VAI was developed by a leading group of asbestos experts; it can be downloaded at <http://www.epa.gov/asbestos/pubs/vairesearchmethodfinal.pdf> (see "Cincinnati Method"). This method is awaiting validation.
- EPA is developing a test to determine whether VAI originated from the asbestos contaminated mine in Libby, Montana. This test will be designed to be used by existing commercial labs to analyze VAI samples from homes.

Activities to improve EPA's understanding of asbestos-related exposures

- Experiments of controlled aerosolization of asbestos from contaminated bulk materials (soils, surfaces, fabrics, carpets, etc.) will be

conducted to evaluate the effects associated with disturbance of contaminated bulk materials under various conditions.

- In collaboration with the U.S. Geological Survey, EPA is conducting a performance evaluation to develop an improved analytical method for evaluation of asbestos contaminated soils. This method will provide more reliable and improved detection of asbestos for exposure characterization and risk assessment.

- EPA is conducting a study to evaluate the relationship between asbestos fiber loads in carpets and indoor air concentrations.
- EPA is evaluating existing procedures and providing recommendations for improvements to current methods for measuring asbestos and other disease-causing fibers. This research will compare the efficiencies of airborne asbestos fiber sampling approaches, including filter composition and pore size and the likelihood that soil-bound asbestos will become airborne.

Activities to improve EPA's ability to perform meaningful environmental sample collection and analysis

- EPA is working to develop improved sampling techniques involving actual scenarios that disturb asbestos contaminated bulk materials (soils, dusts, insulation). This information will facilitate better understanding of likely human exposures and risks.
- EPA has developed a draft standard operating procedure for using a glove box equipped with air monitoring equipment to collect samples for microscopic analysis in order to determine

whether asbestos in soil or other solid matrices will become airborne when disturbed. This method will undergo peer review.

- EPA is developing a new analytical method for addressing asbestos contamination and exposures at Superfund sites. This method will allow for improved risk assessment, exposure characterization, and comparison of critical information between the individual sites.

Applied science in the field

- In order to understand the consequences of environmental exposures and important exposure pathways that could be addressed by the Agency, the EPA Region 8 office and the Agency for Toxic Substances and Disease Registry, in collaboration with the Montana Department of Health, the Libby community, and the Department of Health and Human Services, performed the largest community-based medical screening for asbestos-related disease in U.S. history. During the summers of 2000 and 2001, over 7,000 individuals that worked or lived in Libby, MT were evaluated. Results of the screening showed that 18% of the participants had asbestos-related abnormalities related to a number of exposure pathways, many of which are being addressed through the EPA Superfund program.
- EPA plans to test an alternative method to the current Air Pollutants NESHAP asbestos removal method. This alternative method involves removing certain types of asbestos, wetting the interior of the structure, then demolishing the building with the remaining asbestos in place and applying water during the demolition to minimize possible releases of asbestos fibers to the air. EPA intends to test the alternative method in a monitored, controlled setting, scientifically measure the results, and compare it to the current approved NESHAP asbestos removal method.
- EPA is conducting an extensive site investigation at the former W.R. Grace vermiculite plant in Portland, OR. Bulk samples consisting of soil and dust from the site have been analyzed by multiple analytical methods. Preliminary data suggest the presence of asbestos similar to that identified at the Libby, Montana site and other Libby-associated expansion plants. This effort will include a series of air monitoring experiments in 2005 utilizing the glove box procedures and on-site activity based sampling.
- With funding from EPA Region 9, California conducted a study to measure the asbestos content in airborne dust after driving cars over roads paved with quarried rock contaminated with naturally-occurring asbestos. This study measured the distance and content of the asbestos laden dust and correlated it to speed and number of vehicles. The final report was released in May 2005.
- EPA is revising and updating the risk assessment for the Bureau of Land Management's (BLM) Clear Creek Management Area (CCMA), an offroad recreational area with naturally occurring asbestos deposits. Riders of all-terrain vehicles, motorbikes and sport utility vehicles are equipped with personal monitors to measure the airborne asbestos when riding on the off-road trails. EPA has conducted 5 days of wet and dry season riding sessions and plans to do additional dry season runs. BLM has used the data collected by EPA

in September 2004 to issue a notice that closes the CCMA for the dry season (from June to October 2005). The EPA risk assessment should be completed in 2005.

- EPA has conducted 9 days of activity-based personal monitoring simulating adults and children engaged in various outdoor sports (soccer, baseball and basketball) and recreational activities (running and biking on a trail) in an area containing naturally occurring amphibole asbestos deposits. A report was released to the public in May 2005. The report can be accessed on the web at <http://www.epa.gov/region9/toxic/noa/eldorado/intro1.html>.

OBJECTIVE 2

Identifying and Addressing Exposure and Risk Reduction Opportunities Associated with Asbestos in Products, Schools and Buildings

Asbestos is no longer produced in the U.S., since the last domestic asbestos mine closed in 2002. U.S. consumption of asbestos peaked in 1973 at 885,000 tons. Current estimates are that approximately 3,000 tons per year of asbestos are imported for use in making goods such as roofing products, coatings, packing and gaskets, and friction products, with additional quantities of asbestos contained in manufactured goods that are imported into the U.S. In addition, the vast majority of asbestos products that were produced and installed in the past are still present in U.S. buildings today. Based on the findings from the updated science, EPA will examine opportunities for reducing the risks from asbestos exposure. Where appropriate, EPA will take immediate action to reduce exposure to asbestos-containing products, such as through expanded public outreach efforts.

Federal Consumer Education Campaign

Outreach and risk communication activities are an important part of EPA's effort to address asbestos exposure issues. For example, in the aftermath of Hurricane Katrina, EPA worked to provide state and regional environmental officials along the Gulf Coast with advice on how to handle debris from asbestos-containing buildings and schools in a manner that would minimize exposure. EPA will expand and improve its coordination efforts with other federal agencies, including OSHA and CPSC, to alert and educate consumers, employers and building owners about products with commercially-added asbestos and contaminant-asbestos products. In addition, EPA will update technical materials used by asbestos professionals.

Specific Activities

Distribute Vermiculite Attic Insulation Outreach Pamphlet

EPA has developed and is distributing an educational pamphlet to alert homeowners about the concerns surrounding asbestos contaminated VAI, and to caution against disturbing it without the assistance of a professional.

Training and Outreach to Asbestos Professionals

In consultation with the Occupational Safety and Health Administration and the Consumer Product Safety Commission, EPA will update existing asbestos-in-buildings guidance documents for managing asbestos in buildings and facilities. EPA will also consult with other federal agencies on outreach related to professionals that deal with asbestos.

Issue Updated Asbestos Homeowner's Guide

EPA will update and distribute the Homeowner's Guide to reflect emerging concerns for homeowners, tribes and other stakeholders,

including issues such as VAI, naturally-occurring (or in-situ) asbestos in residential areas, and the evolving science.

Identifying and Reducing Risk from Asbestos in Products, Schools and Buildings

In addition to its outreach activities aimed at immediately reducing asbestos exposure and risk, EPA is taking longer-term actions to address exposure and risk associated with asbestos in products. In addition, the Agency will investigate its regulatory options under the Toxic Substances Control Act (TSCA) with respect to uses of asbestos-containing products.

Specific Activities

Encourage Enhanced Compliance with Existing Regulations

EPA will continue to respond to requests for applicability determinations from the regulated community and the public under the Clean Air Act, specifically the National Emissions Standard for Asbestos at 40 C.F.R. Part 61, subpart M.

Asbestos in Schools Education Outreach Campaign

EPA will continue a campaign to re-educate Local Educational Authorities (LEAs) on the federal requirements for asbestos in schools and the Asbestos Hazard Emergency Response Act (AHERA). The Agency is partnering on this effort with the National Parent-Teacher Association (PTA), the National Education Association (NEA), the American Association of School Administrators (AASA), and the Department of Education. Part of this education campaign includes distribution of updated outreach materials on asbestos in schools and AHERA compliance, with versions in English and in

Spanish, where appropriate. EPA is also working with other federal agencies, such as the Bureau of Indian Affairs, to distribute information to tribes.

Compliance Monitoring and Targeted Enforcement of Asbestos

EPA will follow-up on tips and complaints from the public and determine the appropriate federal response. Also, EPA has identified compliance monitoring activities for the largest local education agencies (LEAs), charter schools, schools that had settlement agreements, and school districts identified for environmental justice or children's health concerns. The Agency will evaluate these sectors and determine if these or other educational sectors should be targeted for compliance monitoring. EPA will inspect and enforce the asbestos in schools regulations under AHERA, and inspect and enforce the asbestos NESHAP in institutional, commercial, public and industrial buildings and structures under the Clean Air Act. The Agency will focus on cases that provide the most risk reduction.

Toxic Substances Compliance Monitoring Cooperative Agreements to State and Tribal Compliance Monitoring Programs

EPA currently funds twenty-three state agreements to conduct compliance monitoring activities for TSCA asbestos regulations.

Training Requirements for Asbestos Inspectors

EPA recently issued revised training requirements for federal, state and tribal inspectors under the Toxic Substances Control Act and the Clean Air Act.

OBJECTIVE 3

Characterizing and Reducing Asbestos Exposures through Assessment and Cleanup

EPA is conducting on-going cleanup operations in Libby, Montana where a now closed vermiculite mine had been the main source of asbestos contamination in the area. In addition, EPA and its federal partners have worked to identify and evaluate domestic processors that used the Libby vermiculite. EPA is actively involved in assessing contamination and evaluating public health risks at the numerous plants which processed the asbestos-contaminated ore from Libby, Montana, as well as sites where naturally-occurring asbestos formations are located. In addition, EPA has been working with federal, state, and other partners to strengthen communications.

Specific Activities

Libby, Montana Cleanup

A now-closed vermiculite mine was the main source of asbestos contamination in Libby, Montana and surrounding areas. Most known source areas near the town of Libby have been cleaned up. Currently, EPA is screening residential and commercial properties for vermiculite and asbestos contamination. Indoor and outdoor cleanup of residences has been ongoing since October 2002. More than 400 residences have been cleaned up to date.

El Dorado County In-Situ Asbestos Assessment

EPA's Region 9 is continuing its assessment of exposures to amphibole asbestos at three schools and a community park in El Dorado Hills, California. The Region is currently conducting a risk assessment with input from ATSDR and the California Office of Environmental Health Hazard Assessment. The Region is also providing El Dorado County with significant funding for

asbestos outreach and education efforts. ATSDR is conducting a health consultation using October 2004 data and is finalizing the health consultation for Oak Ridge High School, the first location in El Dorado Hills where amphibole exposure to children became a community concern. Also, the California Department of Toxic Substances Control, with funding from EPA Region 9, conducted an assessment in El Dorado County of asbestos emissions from roads paved with serpentine gravel, and, based on the results, has recommended that serpentine gravel roads throughout California be re-surfaced to eliminate asbestos emissions.

Libby Mine Processing Facilities ("Sons of Libby") Assessment

EPA has identified 243 sites that received Libby, Montana ore (processed or unprocessed). ATSDR has launched a National Asbestos Exposure Review for 28 of these facilities to determine whether there is any residual risk. There have been 12 reports released by ATSDR to date.

Lower Manhattan Test and Clean Program

EPA has announced a plan to test dust that may remain in Lower Manhattan homes and commercial spaces from the collapse of the World Trade Center buildings. The program will determine whether levels of four contaminants of potential concern, including asbestos, exceed cleanup benchmarks. Under a previous test and clean program launched in 2002, the Agency cleaned and/or tested more than 4,100 homes for asbestos in the air. EPA has also taken the lead in coordinating the efforts of federal, state and city agencies to ensure that buildings breached by the World Trade Center that are now slated for demolition are taken down in a manner that protects the health of people who live and work in the area.

Hurricane Katrina Demolition Guidance

EPA developed guidance for the demolition of structurally-unsound buildings damaged by Hurricane Katrina entitled, "Demolition Guidance for Structurally Unsound Buildings Damaged by Hurricane Katrina." EPA, recognizing the difficult circumstances faced in demolishing structurally-unsound buildings, provided steps for anyone conducting demolition activities to follow to minimize their exposure to asbestos. This included information on:

1. Identifying asbestos-containing materials;
2. Working with those trained in asbestos debris demolition;
3. Specific precautions to take to minimize exposure;
4. Methods for removing asbestos from a collapsed structure; and
5. Disposing of asbestos-containing debris materials.

The guidance was also helpful in advising the officials dealing with the aftermath of Hurricane Rita.

North Ridge Estates

The North Ridge Estates site is a rural residential area three miles north of the city of Klamath Falls, Oregon. The site once housed a Marine Recuperational Barracks facility, consisting of buildings constructed with a variety of asbestos-containing materials, including vinyl floor tiles, roofing materials, concrete asbestos board, and steam pipe insulation. Many of these buildings were demolished in place and the waste material

was covered with soil. Over time, the asbestos-containing material (ACM) has surfaced and more than 20 residential properties now contain ACM. EPA Region 10 began a removal action in 2003 which consisted of surficial removal of ACM and sampling of soil, air and dust. In 2004, activity-based sampling was done to determine whether typical activities result in exposures to fibers at levels of concern to the 60+ residents. Currently, the site is moving into a remedial investigation/feasibility study phase. The goal of this effort is to identify, develop and implement a permanent remedy for the site.

Other Federal Asbestos Activities

As mentioned previously, other federal agencies are conducting actions aimed at addressing asbestos exposure and risk. Examples of some of the key projects follow:

Agency for Toxic Substances and Disease Registry (ATSDR),

Centers for Disease Control and Prevention,
Department of Health and Human Services

ATSDR is conducting a number of activities that will help to improve the state of the science for asbestos. Characterizing exposure and health risks for naturally occurring asbestos is the focus of site specific projects in El Dorado County, California and Ambler, Alaska. Under the National Asbestos Exposure Review (NAER) project, ATSDR and its state health department partners are conducting a variety of studies to assess exposures and potential health impacts at over 200 sites across the U.S. that received and processed asbestos-contaminated vermiculite from the Libby, Montana mine. This broad effort encompasses evaluations of past and present exposure pathways at 28 sites, reviews of health statistics for communities surrounding ~100 vermiculite sites, a community exposure investigation for a processing site in Minnesota, a disease progression study for a cohort of workers from a vermiculite processing site in Ohio, and pilot mesothelioma surveillance studies in New Jersey, New York, and Wisconsin.

National Institute for Occupational Safety and Health (NIOSH),

Centers for Disease Control and Prevention,
Department of Health and Human Services

NIOSH is the federal agency responsible for conducting research and making recommendations for the prevention of work-related injuries and illness. NIOSH is updating an earlier study of Libby vermiculite workers. The original study documented significant excess cases of asbestosis and lung cancer related to asbestos fiber concentrations in the work environment at the Libby mining and milling operations. The update is intended to yield better precision in estimating risk associated with fiber exposure from this vermiculite. In addition, NIOSH is collaborating with two universities to develop models that will enable comparison of dose-response relationships in rats and humans, and information about extrapolating data to predict risk in humans exposed to inhaled fibers for which human dose-response data are not available. NIOSH is also updating a mortality study of workers who were formerly employed at a South Carolina asbestos textile facility. The analysis will include an assessment of the relationship between various metrics of fiber dose (e.g., fiber length and diameter) and the risk of asbestosis and lung cancer.

Occupational Safety and Health Administration (OSHA),

Department of Labor

OSHA sets and enforces workplace safety and health standards, and provides training, outreach and education to encourage continual improvement in workplace safety and health. An estimated 1.3 million employees in construction and general industry face significant asbestos exposure on the job. Heaviest exposures occur in the construction industry, particularly during the removal of asbestos during renovation or demolition. Employees are also likely to be exposed during the manufacture of asbestos products (such as textiles, friction products, insulation, and other building materials) and during automotive brake and clutch repair work. OSHA highly regulates asbestos in the workplace by requiring actions such as engineering controls and the use of personal protective equipment to reduce worker exposure to asbestos. For example, OSHA is currently updating its asbestos guidance aimed at automotive brake and clutch repair workers.

Mine Safety and Health Administration (MSHA),
Department of Labor

MSHA regulates occupational safety and health issues relating to mining. Technical field support assistance is provided to mines to encourage voluntary compliance with existing regulations. MSHA is developing a regulation to reduce the permissible exposure limit (PEL) for asbestos in mines in order to reduce the number of miners developing asbestos-induced occupational disease. A recent report by the Office of the Inspector General recommended that MSHA lower its existing PEL for asbestos to a more protective level and address take home contamination of asbestos. It also recommended that MSHA use Transmission Electron Microscopy to analyze fiber samples that may contain asbestos.

U.S. Geological Survey (USGS),
Department of the Interior

USGS conducts research on asbestos minerals through its Earth Materials and Human Health Project in Denver, Colorado. Deleterious forms of asbestos can occur at minor to trace (non-commercial) levels in many geologic environments. There is growing concern that dusts containing trace asbestiform minerals that are liberated from these geologic materials by natural weathering or human activities may also pose a significant health hazard. In spite of decades of research, many aspects of asbestos and fibrous minerals are poorly understood, including: the processes by which mineral fibers trigger cancer; whether non-asbestiform but needle-like minerals also cause cancer; the distribution and natural background level of asbestiform minerals in dusts from various geologic environments; how mineralogical and geochemical properties of asbestos minerals influence health effects; and how recent earth science technologies can be applied to understand asbestos health issues. In collaboration with human health experts, the USGS Earth Materials and Human Health Project will develop and apply a variety of earth science methods to interpret the geologic links between mineral dusts and human health problems. The project's scientific results will provide a sound earth science basis for more informed, effective regulatory policies and remediation strategies.

Appendix:

GETF *Asbestos Strategies* Report Recommendations to EPA

The Global Environment & Technology Foundation (GETF), funded by a grant from EPA, engaged more than 100 technical and policy experts and other key stakeholders from government, academia, and the private sector to take stock of recent experiences with potential solutions and options regarding the use and management of asbestos. GETF utilized a variety of means to gather information and interact with stakeholders, including interviews and focus groups. A detailed description of the *Asbestos Strategies* process and participating organizations is found in Appendix A of the *Asbestos Strategies* report. The recommendations do not reflect the unanimous consent of all stakeholders. The report highlights areas of concern identified by the participants. In addition, it proposes potential solutions supported by a broad range of sectors engaged in asbestos issues, and seeks to find a balance between different approaches. The text of the report can be found at www.getf.org/asbestosstrategies.

Short-term recommendations

- 1. Update existing asbestos in buildings guidance¹**

EPA should update the “purple book” guidance document to make it the premier technical resource for managing asbestos in buildings and facilities. The revised document should be consistent with current federal regulations and good practices.
- 2. Encourage voluntary compliance with existing regulations¹**

Regulatory agencies should encourage voluntary compliance with existing regulations and good practices for managing asbestos in buildings and conducting response actions. This may be accomplished through a series of asbestos awareness seminars directed at the regulated community (building owners, contractors and consultants). The seminars should be sponsored by EPA and OSHA, and hosted by the resident state asbestos authority. Joint sponsorship would be extremely valuable. Such seminars should be held in conjunction with national or regional meetings of professional/trade associations such as the Environmental Information Association (EIA) to encourage participation by the target audience.
- 3. Consider a Federal legislative ban on asbestos²**

As one option, an outright legislative ban on the production, manufacture, distribution, and importation of products with commercially-added asbestos should be considered. Such legislation would eliminate remaining products by a specified date, and installation of those products by a later date. Jurisdictional issues could be addressed in congressional legislation that might not be achievable by individual agency rulemakings. Exceptions to such a ban may be necessary for a small number of

applications for which substitutes may not be available, and for research purposes. Stakeholders at the focus group meeting did not universally support this option. Implementing regulations, and perhaps the enabling legislation itself, would likely be challenged in the courts.

4. Clarify the asbestos definition to address asbestos contamination in vermiculite and other minerals³

The Libby vermiculite situation should be considered an important lesson, but not be treated as a typical case. The definition of “asbestos” should be clarified to include all asbestiform amphiboles, in addition to currently regulated amphiboles and chrysotile. An evaluation by EPA, OSHA and MSHA will be needed to determine procedurally how this should be accomplished, and what consequences such a clarification might have, if any, on other industries.

5. Develop a national mesothelioma registry²

A national mesothelioma registry is necessary to facilitate epidemiology studies to evaluate the effects of asbestos exposure. Many countries and some states have established mesothelioma registries. The establishment of such a registry would likely be performed by the Centers for Disease Control and Prevention (CDC) in conjunction with state public health departments.

Long-term recommendations

1. Update asbestos model training curricula⁴

The EPA should update the model training curricula and provide a Spanish version of the worker training curriculum. The training providers should also be permitted to vary the course content in refresher courses.

2. Enforce existing asbestos regulations¹

The EPA and OSHA should focus on more predictable enforcement of existing regulations, which may offer greater benefit than committing scarce resources to new rulemaking efforts.

3. Reduce unintended asbestos in products⁴

Reduction of naturally-occurring asbestos in products could be achieved by a program set up by a consortium of mining concerns to develop a sampling and analytical protocol to analyze bulk materials at the mining stage for chrysotile and all asbestiform amphibole forms of asbestos. Oversight of such a program may be provided by EPA and MSHA, with technical assistance by NIOSH and NIST. This program would assist the mining and quarrying industry in avoiding unwanted asbestos in its product. The program would provide a degree of assurance to users of these raw materials that they are not contaminated with asbestos.

4. Reduce asbestos-containing products in commerce⁴

A coordinated effort to educate consumers, employers and building owners about products with commercially-added asbestos is necessary. Such a program would assist the target audience to make an informed decision about which products are legally available with commercially added asbestos. This education and outreach effort would be performed by EPA, OSHA, and CPSC. These agencies would need to perform research into which products actually have commercially added asbestos, which do not, and which are to be phased out voluntarily by manufacturers.

5. Partner with state agencies in support of asbestos training⁴

Training providers under the EPA model accreditation plan (MAP) and corresponding state plans should be audited with sufficient frequency to assure the training is provided, tests are conducted, records maintained, and certificates issued.

¹Addressed in EPA Asbestos Project Plan.

²Recommendation not within EPA's jurisdiction.

³EPA Asbestos Project Plan research efforts will assist in clarifying definition of asbestos; however, revising the definition is an ongoing inter-Agency effort in which discussions are underway.

⁴Potential future projects under EPA consideration.