

October 2007

HAZARDOUS MATERIALS

EPA May Need to Reassess Sites Receiving Asbestos- Contaminated Ore from Libby, Montana, and Should Improve Its Public Notification Process





Highlights of [GAO-08-71](#), a report to congressional requesters

Why GAO Did This Study

Between 1923 and the early 1990s, a mine near Libby, Montana, shipped millions of tons of asbestos-contaminated vermiculite ore to sites throughout the United States. In 2000, EPA began to clean up asbestos contamination at the Libby mine and evaluate those sites that received the ore to determine if they were contaminated. Under Superfund program regulations and guidance, EPA regional offices took steps to inform affected communities of contamination problems and agency efforts to address them.

GAO was asked to (1) describe the status of EPA's and other federal agencies' efforts to assess and address potential risks at the facilities that received contaminated Libby ore and (2) determine the extent and effectiveness of EPA's public notification efforts about cleanups at sites that received Libby ore. GAO, among other steps, convened focus groups in three of the affected communities to address these issues.

What GAO Recommends

GAO recommends, among other things, that the EPA Administrator (1) consider the results of EPA's asbestos risk and toxicity assessment to determine whether any affected sites need to be reevaluated and (2) review regions' implementation of public notification provisions and guidance to ensure that they appropriately determine the extent of outreach needed. EPA expressed general agreement.

To view the full product, including the scope and methodology, click on [GAO-08-71](#). For more information, contact John B. Stephenson at (202) 512-3841 or stephensonj@gao.gov.

HAZARDOUS MATERIALS

EPA May Need to Reassess Sites Receiving Asbestos-Contaminated Ore from Libby, Montana, and Should Improve Its Public Notification Process

What GAO Found

Since 2000, EPA has evaluated 271 sites thought to have received asbestos-contaminated ore from Libby, Montana, but did so without key information on safe exposure levels for asbestos. Based on these evaluations, 19 sites were found to be contaminated with asbestos from the Libby ore and needed to be cleaned up. EPA or the state of jurisdiction generally led or oversaw the cleanups. In general, a cleanup would be performed if sampling results indicated asbestos was present in amounts greater than 1 percent (based on the percentage area in a microscopic field) in soils or debris or greater than 0.1 asbestos fibers per cubic centimeter of air. However, these standards are not health-based and the Agency for Toxic Substances and Disease Registry found that the sampling and analysis methods EPA used at most of the sites it examined were limited and have since been improved. The EPA Office of Inspector General reported in December 2006 that EPA had not completed an assessment of the toxicity of the asbestos in the Libby ore. Until it completes this assessment, EPA cannot be assured that the Libby site itself is cleaned to safe levels, nor will it know the extent to which the sites that received Libby ore may need to be reevaluated. EPA has agreed to complete a risk and toxicity assessment by the end of fiscal year 2010.

EPA regional offices did not implement key provisions of the agency's public notification regulations at 8 of the 13 sites for which EPA had lead responsibility. At four sites, for example, EPA either did not provide and maintain documentation about the cleanups for public review and comment or provide for a public comment period. Also, although EPA guidance emphasizes that simply complying with the public notification rules is often insufficient to meet communities' needs, at five sites EPA did not go beyond these provisions. Reaction among community members to EPA's public notification measures was mixed. At two of the three sites in which GAO held focus groups with affected community members, participants were critical of EPA's efforts to inform them about the cleanup of the asbestos-contaminated sites in their neighborhood. These included participants in Hamilton Township, New Jersey and Minot, North Dakota who noted that newspaper notices did not identify asbestos as the contaminant in question and contained unclear and bureaucratic language. On the other hand, participants in Dearborn, Michigan praised EPA efforts to, among other things, hold public meetings and hand-deliver written notices.

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Abbreviations

ATSDR	Agency for Toxic Substances and Disease Registry
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
EPA	Environmental Protection Agency
HDOH	Hawaii Department of Health
IRIS	Integrated Risk Information System
KYDEP	Kentucky Department of Environmental Protection
MDEQ	Montana Department of Environmental Quality
MPCA	Minnesota Pollution Control Agency
MSHA	Mine Safety and Health Administration
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NJDEP	New Jersey Department of Environmental Protection
OERR	EPA's Office of Emergency and Remedial Response
OSHA	Occupational Safety and Health Administration
OSWER	Office of Solid Waste and Emergency Response

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United States Government Accountability Office
Washington, DC 20548

October 12, 2007

The Honorable Tom Davis
Ranking Member
Committee on Oversight and Government Reform
House of Representatives

The Honorable Christopher H. Smith
House of Representatives

Between 1923 and the early 1990s, a mine located near Libby, Montana, shipped millions of tons of vermiculite ore to hundreds of locations throughout the United States. The vermiculite ore mined in Libby contained high concentrations of naturally occurring asbestos. Vermiculite is used in the manufacture of products such as building insulation, fireproofing material, and some gardening products. At some of the facilities that received Libby ore, manufacturing processes released the asbestos into the air. Some workers and others who inhaled the asbestos fibers developed serious, in some cases fatal, asbestos-related respiratory illnesses. In November 1978, a company in Marysville, Ohio, that processed Libby ore to make fertilizer products reported to the Environmental Protection Agency (EPA) that its employees were suffering lung problems believed to be related to the asbestos in the ore. According to EPA, a number of factors prevented the agency from addressing the issue at the time, including competing priorities for funding and fragmented authority and jurisdiction among federal agencies for regulating substances contaminated with asbestos.

In 2000—more than 2 decades later and in the wake of a series of newspaper articles highlighting health and environmental concerns associated with the asbestos-contaminated ore—EPA began cleaning up asbestos contamination in the Libby area under the authority of the Superfund program, which was created by the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA).¹ In early 2000, EPA began identifying the sites that may have received Libby ore and conducted site evaluations under CERCLA to determine if any of the sites were contaminated with asbestos from the ore

¹42 U.S.C. § 9601 *et. seq.*

and needed to be cleaned up. Either EPA or the state of jurisdiction has had primary responsibility for planning and implementing or, in some cases, overseeing cleanups at these sites. To help EPA assess the risks posed by potential asbestos contamination at sites that received Libby ore, the Department of Health and Human Services' Agency for Toxic Substances and Disease Registry (ATSDR) has performed evaluations of human-health effects that may be associated with past or current exposure to asbestos at selected sites.

Under the regulations implementing CERCLA, known as the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), EPA must generally take a number of steps to notify communities when it cleans up and removes hazardous materials from sites (removal action). These steps include designating a spokesperson to notify communities about the cleanup, creating a record documenting the basis for the cleanup, and making the record available to the public for review and comment. EPA has delegated responsibility for carrying out the public-notification procedures to its 10 regional offices. EPA has also issued policies and guidance establishing public-notification procedures that EPA regions should follow to help ensure early and meaningful community involvement. Even so, in some of the communities where EPA cleaned up asbestos contamination from Libby ore, concerns have been raised as to how well EPA regions followed NCP provisions and guidance for notifying the public.

In this context, you asked us to (1) describe how EPA and other federal agencies assessed and addressed potential risks at the facilities that received asbestos-contaminated vermiculite ore from a mine in Libby, Montana, and the results of these efforts, and (2) determine the extent and effectiveness of EPA regions' efforts to notify the public about the cleanup of facilities that received the contaminated ore.

Because of a pending federal criminal case against W.R. Grace—the company that owned the Libby vermiculite mine and about half of the exfoliation facilities that processed ore from the mine²—and the need to avoid undue influence on the case,³ we designed our methodology to

²Facilities that exfoliated the ore—or heated it until it expanded or popped—are of particular concern because this processing method released higher amounts of asbestos than methods used at other facilities.

³*United States v. W.R. Grace*, Crim. No. 05-07, D. Mont., filed Feb. 7, 2005.

minimize direct contact with EPA staff. To determine the current status of efforts to address potential risks at sites that received the Libby ore, we obtained data from ATSDR, which was largely based on EPA data about each of the sites identified as receiving ore from the Libby mine. For each site, the data included the location, type of facility, amount of ore received, and limited information on the results of EPA's evaluation. We then submitted a set of questions and a table containing data about each of the sites to EPA's headquarters and 10 regional offices to verify, update, and complete that information. To determine the extent of the regional offices' public-notification efforts, we submitted sets of questions in writing to EPA's headquarters and 10 regional offices about their compliance with NCP public-notification provisions and any additional community-notification efforts at sites that were cleaned up. We limited our review to the sites for which EPA had public-notification responsibility. We also conducted structured interviews, in person and by telephone, with state and local government officials to obtain their perspectives on the public-notification efforts that took place in communities where cleanups were located. Finally, we hosted discussions with community members at three sites in different EPA regions to obtain their perspectives on the public-notification efforts.

We performed our work from August 2005 to October 2007 in accordance with generally accepted government auditing standards. A more detailed description of our scope and methodology is presented in appendix I.

Results in Brief

With the assistance of other federal and state agencies, EPA has evaluated 271 sites thought to have received asbestos-contaminated ore from a mine in Libby, Montana, but did so without key information on safe exposure levels for asbestos. In general, the evaluations included visual inspections of the properties and surrounding areas; interviews with facility representatives and other personnel; and reviews of any relevant documentation from state environmental and health agencies. On the basis of this information, sampling was conducted at 80 sites and it was determined that 19 needed removal actions. Generally, either EPA or the states led or oversaw the cleanups. Several factors were considered in determining whether a site required a removal action—the most important being the amount, if any, of asbestos found. In general, a cleanup would be performed if sampling results indicated that asbestos was present in amounts greater than 1 percent (based on the percentage of the area of a microscopic field) in soils or debris or greater than 0.1 asbestos fibers per cubic centimeter of air. However, ATSDR—as a part of its investigations of public-health risks posed by past and present exposures to asbestos

contamination at selected sites—has pointed out that information on the toxicity of the asbestos in Libby ore is very limited, and that the sampling and analysis methods EPA used at most of the selected sites that ATSDR reviewed have since been replaced by more accurate methods. After the EPA Office of Inspector General reported in December 2006 that EPA had not completed an assessment of the toxicity of the asbestos in Libby ore or the risks it posed, EPA initiated plans to do so by the end of fiscal year 2010. When the assessment is completed, EPA should be better able to determine if sites in Libby have been cleaned to safe levels, and whether any of the sites that received Libby ore may still pose a risk to public health and need to be re-evaluated.

The extent and effectiveness of EPA's notification efforts varied across the 13 sites for which EPA had lead responsibility to conduct cleanups. At 8 of the sites, EPA regional offices did not implement key public-notification provisions of NCP. For example, according to EPA regional officials, at Great Falls, Montana (Region 8), they did not establish an administrative record; and in Minneapolis, Minnesota, and Dearborn, Michigan (both in Region 5), they did not hold a public-comment period. In addition, although EPA's public-notification guidance strongly emphasizes that meeting NCP provisions is often insufficient to meet communities' needs for public notification, EPA officials did not conduct notification activities beyond those provisions at 4 sites in EPA Region 9 and 1 site in Region 2. Regional officials at the remaining 8 sites did so to varying degrees. Reaction to EPA's public-notification measures was mixed among affected community members. At 2 of the 3 sites for which we held focus groups of affected community members, participants generally criticized EPA's efforts to inform them of the problems posed by the asbestos-contaminated sites in their neighborhoods. Specifically, participants expressed displeasure with EPA's efforts in Hamilton Township, New Jersey, and Minot, North Dakota, saying, among other things, that notices placed in their local newspapers did not identify asbestos as the contaminant in question; contained unclear and bureaucratic language; or used such small print that the notices were difficult to read. On the other hand, focus-group participants in Dearborn, Michigan, praised EPA's efforts to hold public meetings, hand deliver written notices, translate notices for non-English-speaking residents, and respond to individuals' concerns.

We are recommending that the EPA Administrator direct the Assistant Administrator for the Office of Solid Waste and Emergency Response to (1) determine, after considering the results of the risk and toxicity assessment and the availability of improved sampling and analysis

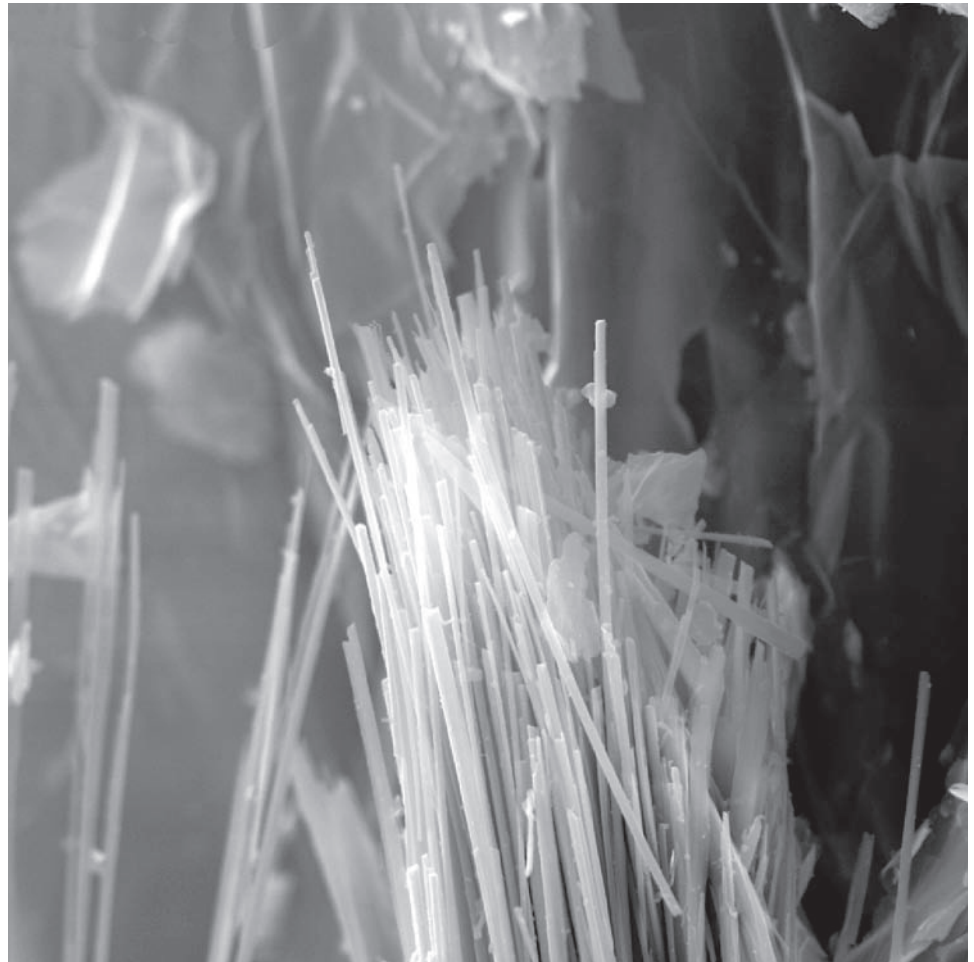
techniques, whether any sites potentially contaminated with asbestos from the Libby ore should be re-evaluated to determine whether they pose a threat to public health; and (2) review the regional offices' implementation of NCP provisions for public notification and associated guidance to ensure, among other things, that, in the future, regional offices are appropriately determining the extent of community outreach needed. In responding to a draft of this report, EPA generally agreed with our findings and recommendations, and provided technical comments which we incorporated, as appropriate. ATSDR provided only technical comments via e-mail, which were also incorporated, as appropriate. See appendix II for EPA's comment letter and for our evaluation of these comments.

Background

The vermiculite ore mined at Libby, Montana, between 1923 and the early 1990s contained high concentrations of naturally occurring asbestos minerals, including tremolite, winchite, richterite, and others⁴ (see fig. 1). As the ore was mined and processed, dust containing asbestos fibers was released into the air, which workers then inhaled. By the early 1900s, asbestos was recognized as a cause of occupational disease. Initially, the disease associated with asbestos was asbestosis, a nonmalignant respiratory disease characterized by scarring of the lung tissue that may progress to significant impairment and death. During the 1930s and 1940s, the connection between asbestos exposure and lung cancer emerged. By 1960, the connection between asbestos and mesothelioma—a cancer of the mesothelial lining of the lungs—was established. Diseases stemming from exposure to asbestos may not be apparent for decades after the initial exposure. Thus, even though the Libby mine closed around 1990, many residents, former workers, and others who were exposed to the asbestos-contaminated ore, recently have been diagnosed with asbestos-related diseases and many more may become ill in the future.

⁴Asbestos minerals fall into two groups or classes—serpentine and amphibole. The vermiculite ore from the Libby mine contained amphibole asbestos. Regulated minerals in the amphibole class are actinolite, anthophyllite, amosite, crocidolite, and tremolite.

Figure 1: Asbestos Fibers in Libby Vermiculite Ore



Sources: U.S. Geological Survey and EPA.

EPA's involvement with Libby's asbestos-contaminated vermiculite ore dates back to the late 1970s and continued intermittently until 1999, when the agency initiated an investigation that led to ongoing cleanup activities in the Libby area. In 1978, EPA learned that workers at a vermiculite processing plant in Marysville, Ohio—one of hundreds of sites across the United States where Libby vermiculite ore was sent—were exhibiting symptoms of asbestos-related diseases. Between 1980 and 1982, EPA

issued a series of reports related to asbestos-contaminated vermiculite.⁵ Most of these reports indicated that there was a lack of data on both exposure to asbestos-contaminated vermiculite and its adverse health effects. Further, the reports identified problems in sampling, analysis, and reproducibility of data regarding low levels of asbestos in vermiculite, which made it difficult to acquire data on exposure and health effects. One of the studies also noted that EPA needed to develop more information identifying, among other things, the vermiculite-mine sites, the processors of vermiculite, and the potential number of employees exposed to asbestos-contaminated vermiculite. In a February 1985 report, EPA estimated the levels and ranges of exposure to asbestos-contaminated vermiculite for workers and the general public and indicated that, with further study, this information could be used for regulatory decision making. This report contained a list of the locations of 52 exfoliation plants in the United States that had received vermiculite ore from the Libby mine.⁶ Even so, EPA did not initiate any action at the time and, until 1999, did little to address concerns about the health risks associated with exposure to asbestos-contaminated vermiculite ore.⁷

In 1999—after a series of newspaper articles reporting that miners and their families in the area of Libby, Montana, had died or were ill from exposure to the asbestos-contaminated vermiculite ore—EPA began investigating the contamination in the Libby area and began cleaning up the contamination in 2000. Subsequently, concerns were raised about why

⁵U.S. Environmental Protection Agency, Office of Pesticides and Toxic Substances, *Priority Review Level 1—Asbestos-Contaminated Vermiculite* (Washington, D.C., June 1980).

U.S. Environmental Protection Agency, Office of Toxic Substances, *Decision Paper for Asbestos-Contaminated Vermiculite* (Washington, D.C., August 1981).

U.S. Environmental Protection Agency, Office of Toxic Substances, *Disposition Paper for Asbestos-Contaminated Vermiculite* (Washington, D.C., August 1982).

Midwest Research Institute, *Collection, Analysis and Characterization of Vermiculite Samples for Fiber Content and Asbestos Contamination*, a report developed for the U.S. Environmental Protection Agency, Office of Pesticides and Toxic Substances (Washington, D.C., September 27, 1982).

⁶Versar, Inc., *Exposure Assessment for Asbestos Contaminated Vermiculite*, a report prepared for the U.S. Environmental Protection Agency, Office of Toxic Substances, (Washington, D.C., February 1985).

⁷EPA cited and fined W.R. Grace in the early 1990s for failure to submit relevant information under the Toxic Substances Control Act.

EPA had not taken action much earlier in Libby, which resulted in investigations by both the EPA Office of Inspector General and GAO. The subsequent reports concluded that, due to various challenges, EPA missed past opportunities to take steps that might have protected the citizens of Libby.⁸ These challenges included (1) fragmented regulatory authority and jurisdiction with other federal agencies and within EPA, along with ineffective communication, which made it difficult for EPA to take action; (2) limitations of science, technology, and health-effects data that made it difficult for EPA to determine the degree of health risk at Libby; and (3) funding constraints and competing priorities, which led EPA to de-emphasize dealing with asbestos-contaminated vermiculite. Since these reports were issued, as part of an ongoing criminal case against W.R. Grace, the government has alleged that Grace engaged in a conspiracy to defraud EPA and the National Institute for Occupational Safety and Health by concealing and misrepresenting the nature of the asbestos-containing vermiculite produced at the mine.⁹ Grace has denied the allegations.

When EPA began cleaning up contamination in the Libby area in 2000, it also took steps to identify and evaluate sites that may have received shipments of Libby ore for asbestos contamination according to CERCLA. Under NCP regulations that implement CERCLA, a removal site evaluation involves, among other things, identifying the source and nature of any hazardous-substance release, analyzing the magnitude of the potential threat to human health and the environment, and evaluating factors necessary to make the determination of whether a removal is necessary.

According to NCP regulations, when EPA is the lead agency for a cleanup, an EPA region must take certain actions, as appropriate, to notify the public about a removal action. These actions include (1) designating a spokesperson to notify immediately affected citizens and state and local officials about the cleanup; (2) creating a record documenting the basis for the cleanup action and making the record publicly available; (3) publishing

⁸U.S. Environmental Protection Agency, Office of the Inspector General, *EPA's Actions Concerning Asbestos-Contaminated Vermiculite in Libby, Montana* (Washington, D.C., March 31, 2001) and GAO, *Hazardous Materials: EPA's Cleanup of Asbestos in Libby, Montana, and Related Actions to Address Asbestos-Contaminated Materials*, [GAO-03-469](#) (Washington, D.C.: April 14, 2003).

⁹The National Institute for Occupational Safety and Health is the federal agency responsible for conducting research and making recommendations for the prevention of work-related injury and illness. The Institute is a part of the Centers for Disease Control and Prevention in the Department of Health and Human Services.

a notice that the record is available for review in a major local newspaper; and (4) providing an opportunity for the public to comment on the record. When EPA expects the cleanup action to last more than 120 days, the regional office must also conduct interviews with interested or affected parties, prepare a formal community response plan, and establish at least one local information repository at or near the cleanup location, such as at a public library.

EPA has also issued numerous policy directives and guidance documents over the years establishing additional public notification procedures that EPA regions should follow. For example, EPA guidance issued in July 1992 directed regions to interact closely with and reach out to communities. This guidance specifies that one of the goals of public participation is to inform the public about the risks associated with a site and any cleanup actions. The guidance also states that it is imperative for EPA to give the public prompt, accurate information about the nature of threats to public health and the environment, and the removal action necessary to mitigate the threats. In its April 2002 guidance, EPA stated that just complying with NCP provisions is often insufficient for informing the media, the public, and interested stakeholders. This guidance strongly suggested the regions use other options for meeting community needs, such as scheduling press briefings; establishing a local or toll-free telephone hotline; and canvassing neighborhoods to identify residents' needs, fears, and concerns.

ATSDR has provided information to EPA to help assess the risks posed by potential asbestos contamination at selected sites that received Libby ore. Specifically, in 2002, ATSDR launched the first phase of its National Asbestos Exposure Review. Under this phase of the project, ATSDR evaluated human health effects that may be associated with past or current exposure to asbestos at 28 of the sites that had received and processed the vermiculite ore mined in Libby, Montana. These sites were selected because they received a high-volume of Libby ore (greater than 100,000 tons) or EPA identified them as needing further investigation. These 28 sites together received about 80 percent of the vermiculite ore shipped from the Libby mine between 1964 and 1980.

Federal Agencies Have Assessed Sites Thought to Have Received Asbestos-Contaminated Ore but Did So without Critical Information about Safe Exposure Levels

EPA, with assistance from other federal and state agencies, has assessed 271 sites that were thought to have received asbestos-contaminated ore from Libby, Montana, to determine if the sites are contaminated with asbestos and if they need cleanup. As a result of these investigations, 19 sites were identified as requiring cleanup. As a part of ATSDR's effort to evaluate public-health risks posed by past and current exposures to asbestos contamination in the Libby area and at some of the sites that received the Libby ore, ATSDR has noted there is an absence of key information on the toxicity of the asbestos found in the Libby ore. ATSDR also noted that the methods EPA used to sample and analyze the air and soil at most of the 28 sites it reviewed have since been improved and now better quantify asbestos levels. After the EPA Office of Inspector General recommended in December 2006 that EPA perform a toxicity assessment to determine safe levels of exposure for humans, EPA agreed to do so.

EPA Has Evaluated Sites That May Have Received Libby Ore and Concluded Some Needed to be Cleaned Up

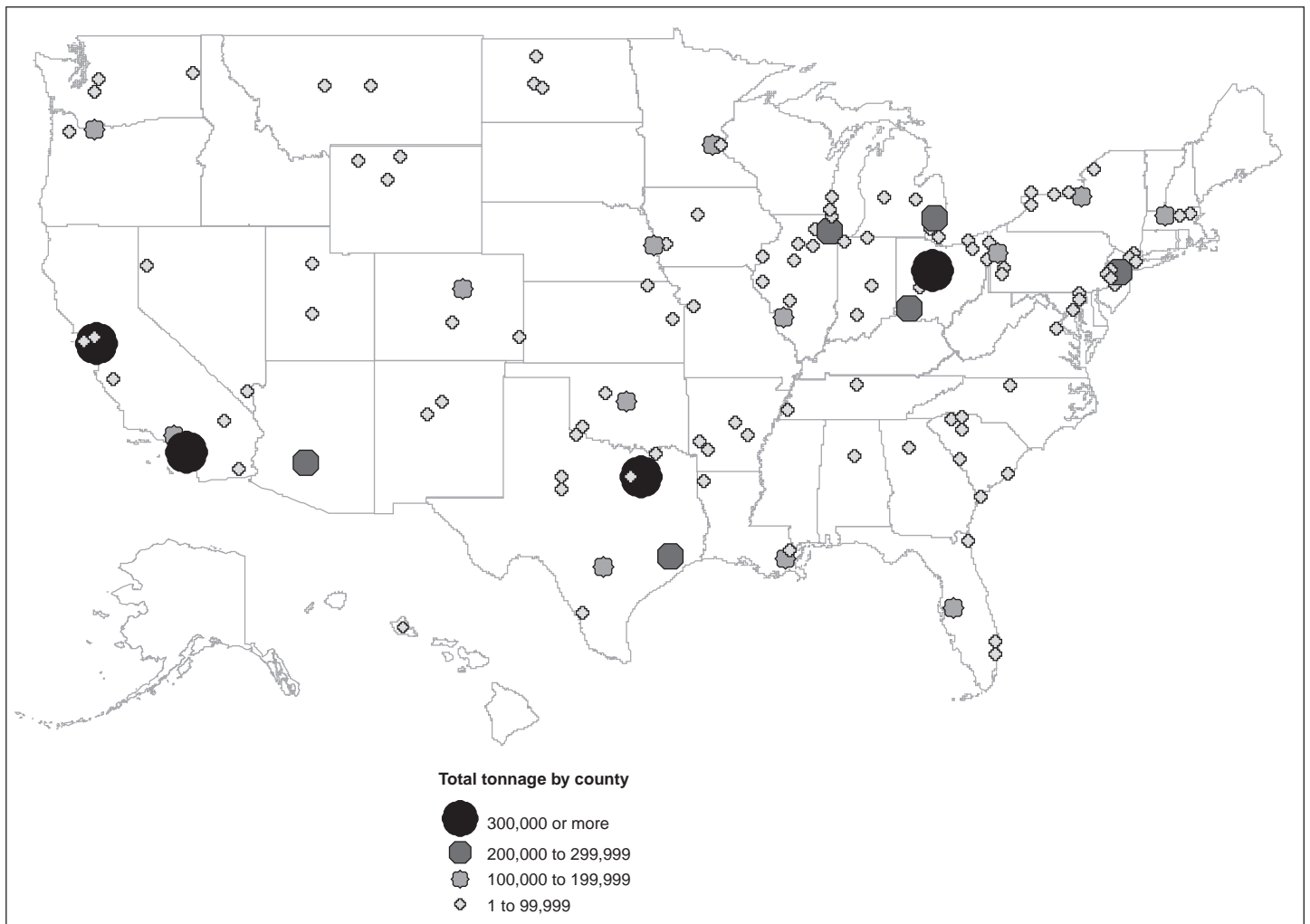
EPA has taken a number of actions to identify and evaluate sites that may have received Libby ore and, when needed, has conducted removal actions. In early 2000, EPA began compiling a list of facilities that might have received asbestos-contaminated vermiculite ore from the Libby mine. To compile the list, it used shipping records and other information obtained from W.R. Grace as well as historical information about vermiculite processing facilities from the Bureau of Mines and the U.S. Geological Survey. Initially, EPA identified over 500 sites, but after coordinating with the U.S. Geological Survey to update and revise the list of facilities and eliminate duplicate entries, EPA narrowed the list to less than 300 potential sites.

The data that EPA collected on the sites believed to have received Libby ore paint a picture of the distribution of Libby ore across the United States. Figure 2 illustrates the nationwide distribution based on 195 sites for which data on the amount of ore shipped were available. These 195 sites are believed to have received a combined total of at least 6 million tons of ore from the Libby, Montana, mine and ore processing operations.¹⁰ The 271 sites were located in 39 states, the District of Columbia, and Puerto Rico. The most sites were in California (28) and Texas (26). EPA has continued to identify sites and will investigate them as it deems

¹⁰Since data on the amount of ore received at 76 of the sites is not available, the 6 million tons is likely to understate the amount of ore shipped.

necessary. For example, in 2006, EPA identified additional sites (included in the 271) that it needed to assess for asbestos contamination.

Figure 2: Nationwide Distribution of Libby Ore by County (in tons)



Source: GAO analysis of EPA data.

Notes: Alaska and Hawaii are not to scale. Data on the distribution of ore are based on approximately 80,000 invoices that EPA obtained from W.R. Grace which document shipments of vermiculite ore made from the Libby mine between 1964 to 1990. EPA tabulated this shipping information in a database. EPA does not believe it received an invoice for every shipment of Libby ore made during that time period, and the database represents only what EPA was able to collect from W.R. Grace.

According to the data that EPA collected, most (95 percent) of the vermiculite ore known to have been shipped from Libby between 1964 and

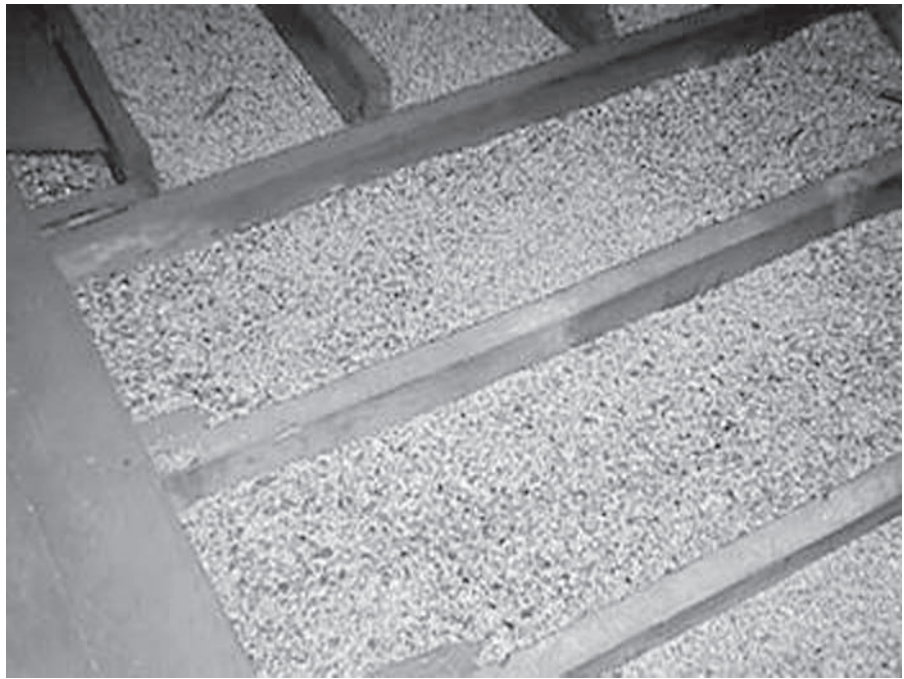
1990 went to facilities that converted it into commercial vermiculite through a process called “exfoliation” (expansion). Exfoliation plants heated the vermiculite ore to approximately 2,000 degrees Fahrenheit, which caused the ore to expand, or pop. This expanded vermiculite was then used in a variety of products, including loose-fill insulation in homes (see figs. 3 and 4 for photos of expanded vermiculite ore and vermiculite insulation). Because significant concentrations of asbestos fibers were likely released during the exfoliation process, of the facilities that received Libby ore, exfoliation plants were deemed the most likely to have caused environmental contamination and exposure.

Figure 3: Raw (Right) and Popped (Left) Vermiculite



Sources: U.S. Geological Survey and EPA.

Figure 4: Closeup of Vermiculite Insulation in an Attic



Source: EPA.

In performing their preliminary assessment of sites, EPA regions generally tried to determine the facilities' locations using a variety of methods, including title searches; reviews of town records; and interviews with people who might provide useful information, such as company representatives or people who formerly worked at the sites. Once they identified an accurate address for a site, a "windshield survey" was performed to determine current site conditions and gather additional information on past operations at the site. These surveys generally included viewing the suspected location and its surrounding area and, in some instances, interviewing business owners and residents in the immediate vicinity.

If these initial surveys indicated the need for further examination, the regions typically conducted a detailed investigation of the site. This investigation typically consisted of a site visit, which included a more thorough visual inspection of the property and surrounding area; additional interviews with people who might be knowledgeable about past operations, such as facility representatives; reviews of any relevant and

available documentation from state and federal agencies; and, if deemed necessary, collection of soil and air samples.

As indicated in table 1, EPA conducted site visits to at least 241 of the sites.¹¹ At least 19 sites were not visited because either initial efforts to determine site locations were unsuccessful or information gathered while pre-screening the sites indicated that a site visit was not necessary. For example, for a site located in Stanton, North Dakota, company officials indicated in a letter that the company purchased a relatively small amount of Libby ore in the early 1980s and had since obtained vermiculite ore from a mine in Virginia. The company officials provided EPA Region 8 with a lab analysis of the ore from the Virginia mine, which indicated no asbestos was present in the ore. As a result, EPA Region 8 concluded a site visit was not necessary.

¹¹For 11 sites in Region 4, EPA's files did not contain sufficient documentation to determine definitively whether the sites had been visited.

Table 1: Information on Sites That Were Identified As Receiving Libby Ore, by EPA Region

EPA regional office	Number of sites	Amount of ore received (in tons) ^a	Percentage of total ore received by sites nationwide	Number of sites visited by EPA	Number of sites where sampling was conducted	Number of sites where assessment is ongoing	Number of sites determined to need cleanup
1	5	194,750	3.2	4	2	0	1
2	23 ^b	323,152	5.3	22	4	2	1
3	22	280,472	4.6	20	10	1	1 ^c
4	35	578,006	9.5	24 ^d	13 ^e	0 ^f	1
5	61	1,387,176	22.7	61	16	0	2
6	45 ^g	1,221,289	20.0	41	2 ^h	2	0
7	15	355,579	5.8	15	6	0	0
8	18 ⁱ	210,913 ^j	3.5	16	9	0	5
9	36	1,292,114	21.2	28	13	0	5
10	11	255,237	4.2	10	5	0	3
Total	271^k	6,098,688	100	241	80	5	19

Source: GAO analysis of EPA data.

^aThe data on the amount of ore received is from an EPA database of W.R. Grace invoices for shipments of vermiculite from the Libby mine between 1964 and 1990. For 76 of the sites (28 percent), the amount of ore received is unknown. As a result, the data on the amount of ore received is likely understated.

^bAccording to EPA Region 2 officials, two sites located in Edgewater, New Jersey, are actually the same site. As a result, GAO recorded those two sites as one.

^cIn May 2007, EPA informed GAO that EPA Region 3 had decided a cleanup action would be needed at a site located in Ellwood City, Pennsylvania. Because the site was added after GAO completed its analysis of site data, this site is not included in the number of sites determined to need cleanup but is included in the number of sites where assessment is ongoing.

^dFor 11 sites in Region 4, EPA's files did not contain sufficient documentation to determine definitively if the sites had been visited.

^eFor 22 sites in Region 4, EPA's files did not contain sufficient documentation to determine definitively if sampling had taken place.

^fFor 6 sites in Region 4, no documentation of an assessment could be located in EPA's files. Therefore, it is not possible to determine definitively if EPA completed evaluations at those sites.

^gAccording to EPA Region 6 officials, two sites located in Albuquerque, New Mexico, are actually the same site. As a result, GAO recorded those two sites as one.

^hEPA Region 6 planned to assist the state of Louisiana in collecting samples at a site located in New Orleans, but sampling was delayed because of damage caused by Hurricane Katrina.

ⁱThe list of sites that EPA Region 8 provided to GAO included a retail store located within a W.R. Grace export facility in Libby, Montana. This site is one of several sites in Libby, Montana, currently being cleaned up by EPA. Because of the pending federal criminal case related to W.R. Grace's actions at the mine located in Libby, GAO did not review the status of EPA's efforts to assess and clean up any of the sites located in Libby. As a result, the retail store was excluded from the number of sites located in Region 8.

^jFor one site in Region 8, the source of the contamination was a former employee who brought contaminated material home and used it as fill material in his driveway. No shipments of ore were received at this site, so it is not included in the total amount of ore received by sites located in Region 8.

^kAccording to W.R. Grace shipping records and other data, 271 sites were identified as potentially receiving Libby ore. EPA did not continue investigating at least 19 sites because the sites could not be located or preliminary information indicated a site visit was not necessary. Because of a lack of documentation for 11 sites in Region 4, it is unclear whether site visits took place at those sites.

For the sites where the regions decided sampling was warranted, samples of “bulk” materials—such as raw vermiculite ore, suspected waste vermiculite piles, and soils—were collected. Air samples were collected if there was concern that disturbing contaminated materials (in the soil or elsewhere) could result in asbestos fibers migrating into the air and being inhaled. Based on information obtained during the site visits, bulk and, in some cases, air samples were collected for at least 80 (30 percent) of the sites (as shown in table 1).¹²

One of the most important factors EPA regional offices considered in determining whether a site needed to be cleaned up was the amount, if any, of asbestos present at the site. In general, a cleanup would be performed if sampling results indicated that asbestos was present in amounts greater than 1 percent (based on the percentage of the area of a microscopic field) in soils or debris or greater than 0.1 asbestos fibers per cubic centimeter of air. According to EPA, the “1 percent threshold” for asbestos in soils or debris is not a health-based standard, but is rather related to the limit of detection for the analytical methods available during the early years of EPA’s asbestos program (early 1970s), and to EPA’s desire to concentrate resources on materials containing higher percentages of asbestos. EPA has never determined that materials containing less than 1 percent asbestos are safe, and scientists have not been able to develop a safe level for exposure to airborne asbestos. Of the sites sampled, 22 had levels of asbestos that that exceeded the thresholds, 29 had detectable levels of asbestos that were below the thresholds (trace amounts), and 26 sites had no detectable levels of asbestos.¹³

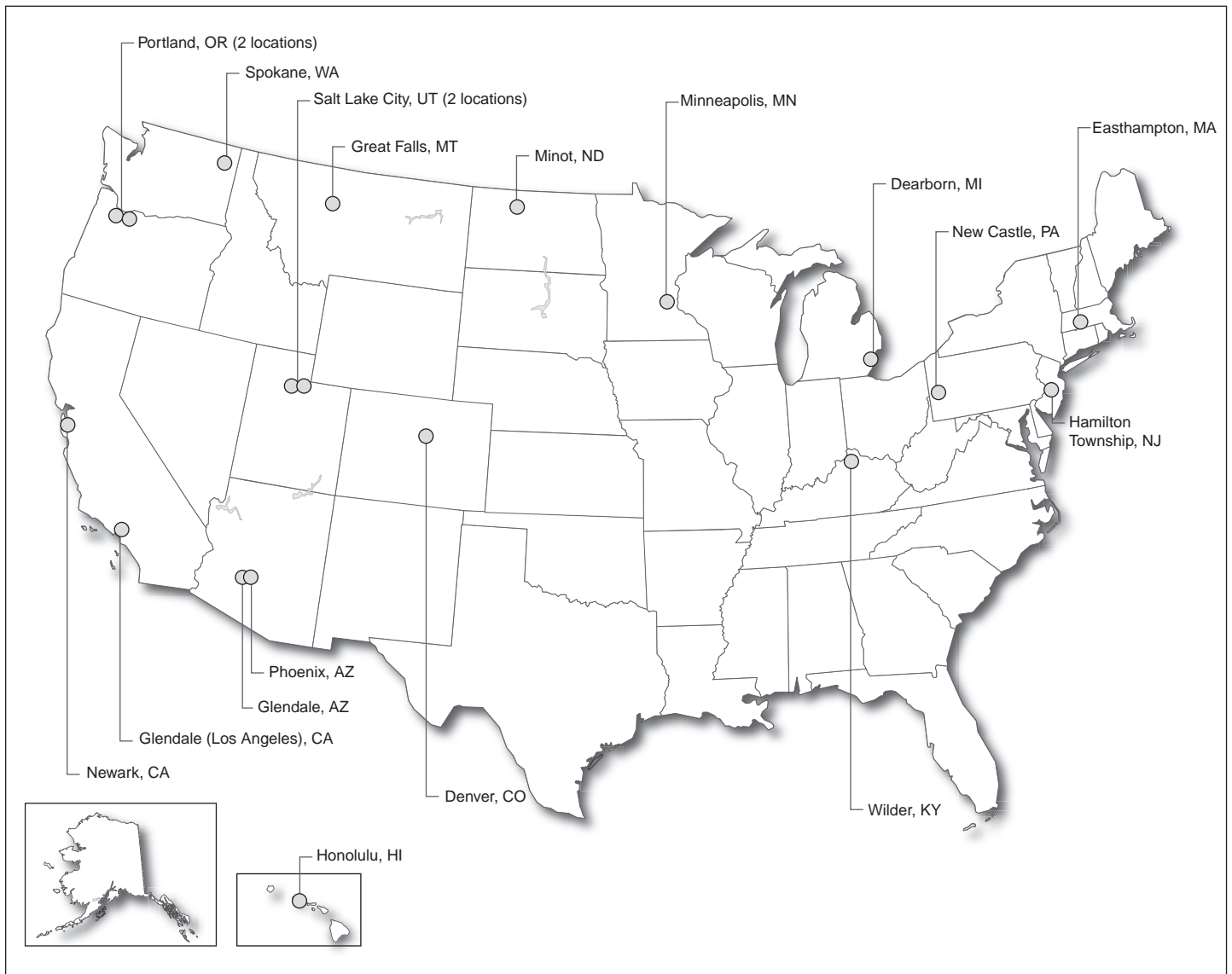
¹²For 22 sites in Region 4, EPA’s files did not contain sufficient documentation to determine definitively if sampling had taken place.

¹³For one site in Region 5, sampling results were unavailable because the site file was lost. For one site in Region 6, sampling had been completed but the results were not available when we last received data about sites located in that region in November 2006.

After reviewing the sampling results and other pertinent information collected about the sites, EPA—and in some instances states—identified 19 sites where contamination from the asbestos in Libby ore needed to be cleaned up. Figure 5 includes a map showing the location of the 19 sites that were identified for cleanup. With the exception of one site, all of the sites that needed to be cleaned up had levels of asbestos in soils that exceeded the 1 percent threshold.¹⁴ For the one exception, a site located in Salt Lake City, all of the soil samples contained trace amounts of asbestos (less than 1 percent). However, after raking the ground and using a leaf blower, EPA collected air samples which showed elevated levels of asbestos fibers that exceeded the threshold of 0.1 asbestos fibers per cubic centimeter of air. As a result, EPA determined this site needed to be cleaned up as well.

¹⁴There were three sites that had asbestos contamination in excess of the 1 percent threshold but were not cleaned up. For one of those sites located near Center, North Dakota, residual contamination was limited to a hopper used to process vermiculite ore. According to company officials, Libby ore was used for a 28-day trial period in the early 1980s and had not been used since. The company agreed to have trained asbestos workers remove the residual vermiculite from the hopper, and EPA Region 8 officials decided no further action was needed. For a site in Brutus, New York, after a review by a regional risk assessor and the EPA official in charge of the project, it was decided that the site is not eligible for cleanup under CERCLA. The assessment report documenting this decision is being drafted for management review and approval. In May 2007, EPA notified us that it had recently decided to also clean up a site located in Ellwood City, Pennsylvania. Since this decision was made after we completed our analysis of the site data, we did not include this site as one of the cleanup sites in this report.

Figure 5: Nineteen Sites Receiving Asbestos-Contaminated Libby Ore That Were Identified for Cleanup



Sources: EPA (information); Map Resources (map).

Note: In May 2007, EPA decided to also clean up a site located in Ellwood City, Pennsylvania. Since this decision was made after GAO completed its analysis of the sites, we did not include this site as one of the nineteen sites in the report.

ATSDR Concluded Former Workers at Facilities That Processed Libby Ore Were Most at Risk for Asbestos Exposure and That Health-Effects Data Are Limited

In conjunction with EPA's efforts to evaluate sites that received Libby ore, ATSDR is conducting a project—the National Asbestos Exposure Review—to investigate selected sites that received and processed ore from the Libby mine. These investigations—referred to as health consultations—involve evaluating information about toxic material at a site, determining whether people might be exposed to it, and reporting what harm exposure might cause. Health consultations may be performed by ATSDR staff or by state health department officials working under a cooperative agreement with ATSDR. The consultations may consider

- what levels (or concentrations) of hazardous substances are present;
- whether people might be exposed to contamination and how (through “exposure pathways” such as breathing air, drinking or coming into contact with water, eating or coming into contact with soil, or eating food);
- what harm the substances might cause people (or the contaminants’ “toxicity”);
- whether working or living nearby might affect people’s health; and
- other dangers to people, such as unsafe buildings or other physical hazards.

Every health consultation includes ATSDR’s conclusions about public-health hazards and recommendations for actions to protect public health. These can include recommended follow-up activities for EPA, state environmental and health agencies, and ATSDR. For example, the recommendations could be related to (1) cleaning up sites; (2) keeping people away from contamination and physical dangers—for example, by placing a fence around a site; (3) giving residents safe drinking water; (4) relocating exposed people; (5) providing health education for residents

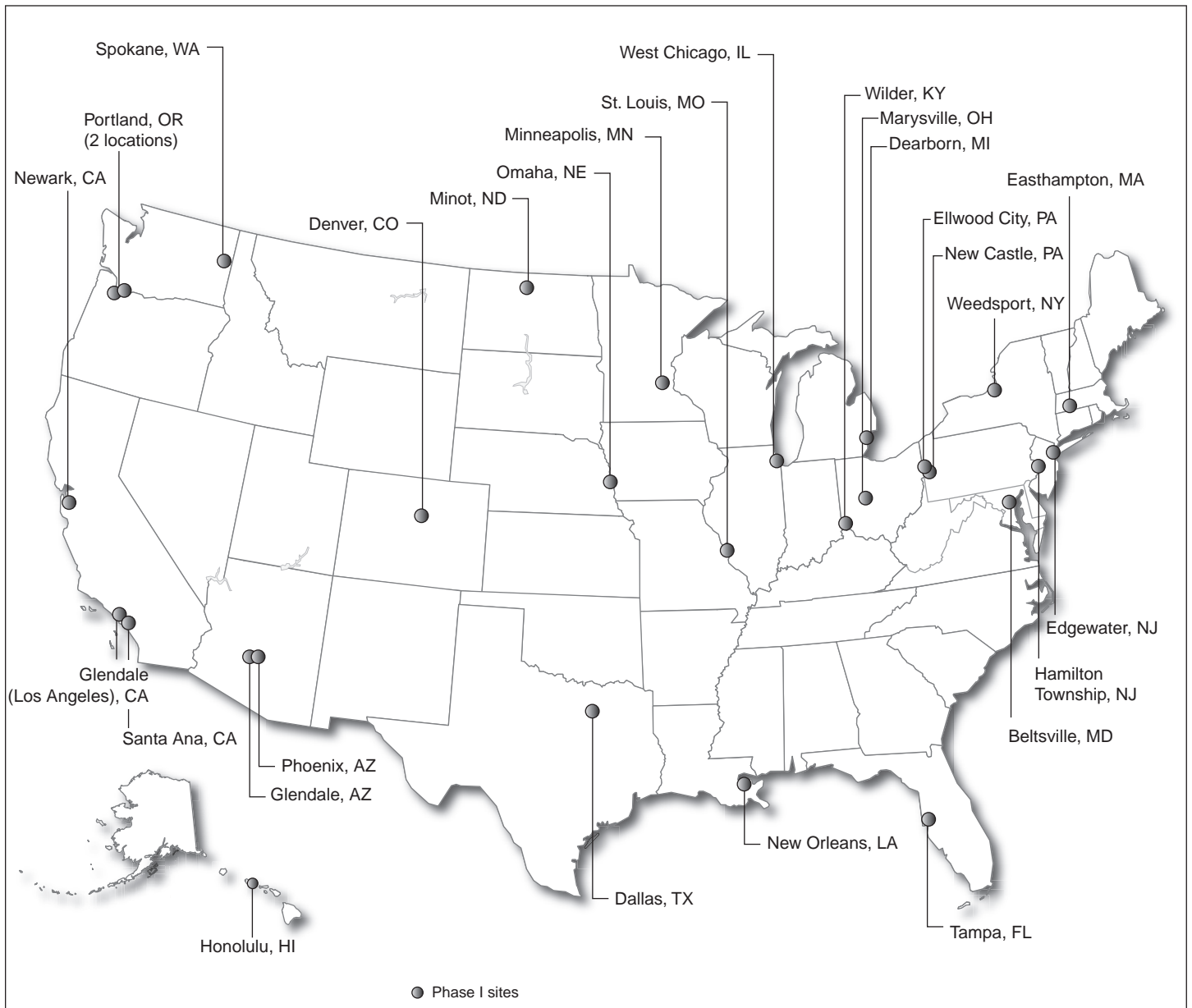
and health-care providers to inform them about site contaminants and harmful health effects; and (6) performing additional health studies.¹⁵

ATSDR is conducting the National Asbestos Exposure Review in two phases. In Phase 1, it is conducting health investigations of 28 sites. These 28 sites together received about 80 percent of the vermiculite ore believed to have been shipped from the Libby mine between 1964 and 1980 (see fig. 6). As of June 2007, ATSDR had completed investigations at all 28 sites. For each site, ATSDR has issued a health-consultation report and a fact sheet summarizing the results of the site evaluation.¹⁶ Phase 1 will conclude with the completion of a report summarizing all 28 site investigations. This report will likely be released in late 2007 or early 2008. In Phase 2 of the National Asbestos Exposure Review, ATSDR will build on work from Phase 1 to determine the need for public-health activities at additional sites that received Libby ore. ATSDR's role during Phase 2 will vary from providing technical support or advice to other agencies to possibly conducting additional public-health activities.

¹⁵ATSDR is also conducting several other projects focusing on the health effects of exposure to asbestos fibers in Libby ore. For example, ATSDR is evaluating available data on asbestos-related cancers and asbestos-related mortality in communities located near approximately 70 vermiculite processing facilities to help determine whether additional health studies are needed. Also, ATSDR has initiated Pilot Mesothelioma Surveillance projects in New York, New Jersey, and Wisconsin to (1) better understand environmental and occupational exposure to asbestos among newly diagnosed mesothelioma patients, (2) evaluate a possible association between mesothelioma and the asbestos fibers in Libby ore, and (3) determine if further study is needed to clarify the ways in which people were exposed to asbestos fibers in Libby ore. ATSDR is also involved in the National Asbestos Health Program, which is intended to assess the prevalence of asbestos-related conditions among current and former workers and their household contacts at selected sites in Arizona, California, Minnesota, and New Jersey that processed Libby ore.

¹⁶These reports and fact sheets have been made public through the media and on the Internet. The health consultations can be found at www.atsdr.cdc.gov/asbestos/sites/national_map/.

Figure 6: ATSDR National Exposure Review Phase 1 Sites



Sources: ATSDR (information); Map Resources (map).

In selecting the 28 Phase 1 sites, ATSDR selected sites that would be more likely to pose public-health risks because the sites (1) had been designated by EPA as requiring further action based on current contamination, or

(2) were exfoliation facilities that processed more than 100,000 tons of vermiculite ore from the Libby mine.¹⁷ ATSDR's general conclusions about past and current exposures to asbestos from the contaminated Libby ore at the 28 sites included the following:

- Former employees at the facilities that processed the asbestos-contaminated vermiculite ore were most at risk for exposure.
- Those who lived in the employees' homes may have also been exposed because asbestos fibers could have been carried home on the employees' clothing, skin, and hair.
- People could have been exposed to asbestos if they handled or played in waste rock, a by-product of vermiculite exfoliation. At some of the vermiculite plants, workers or people in the community may have brought the waste rock from the plants to their homes to use in gardens and as fill or driveway surfacing material. If this waste rock is uncovered and stirred up, asbestos fibers may be released into the air. Determining the extent to which former and current residents were or could currently be exposed to waste rock on their properties was not possible at most sites given a lack of knowledge about whether or to what extent past community members may have taken waste material home.
- People living around the plants could have been exposed to asbestos fibers in the air when vermiculite was being processed at the sites. Determining whether former residents were exposed to hazardous levels of asbestos was not possible at most of the sites given a general lack of data on past emissions from the facilities.
- Since the plants no longer process Libby ore, current residents living around the sites are no longer being exposed through air emissions from processing activities at the plants.

As a part of its on-going work to assess public-health risks at the Phase 1 sites, ATSDR has also reported significant gaps in scientific data used to evaluate health risks associated with exposure to the type of asbestos fibers found in Libby ore. ATSDR has pointed out that evaluating health effects requires extensive knowledge of both the ways in which people

¹⁷Facilities that exfoliated the ore—or heated it until it expanded or popped—are of particular concern because this processing method released higher amounts of asbestos than methods used at other facilities.

were exposed and the level of asbestos that is harmful to humans (i.e., the toxicity of the asbestos). According to ATSDR, the public health implications of exposures to these fibers are difficult to determine in part because the toxicological information currently available for the asbestos fibers found in the Libby ore is very limited. Also, in a May 2003 Public Health Assessment of the Libby site, ATSDR recommended that “more research is needed, specifically: toxicological investigation of the risks associated with low-level exposure to asbestos, especially Libby asbestos; clinical research on treatment for mesothelioma and asbestosis; and epidemiology studies to better characterize the link between exposure to asbestos and disease.”

ATSDR has also noted that the 1 percent threshold used in determining when sites need to be cleaned up is not health based. Furthermore, the agency cited EPA studies showing that disturbing soils containing less than 1 percent asbestos can suspend fibers in the air at levels that cause a health concern. Therefore, ATSDR concluded it is unclear whether sites that were not cleaned up and with asbestos levels of less than 1 percent were safe.

In addition, ATSDR stated that the sampling and analysis methods used by EPA at some of the sites were limited in their ability to detect and measure asbestos fibers.¹⁸ In fact, recent health-consultation reports for two sites in Portland, Oregon, issued by the Oregon Department of Human Services in consultation with ATSDR, pointed out that sampling and analysis methods have been improved since samples were taken at those sites in 2000 and that new methods are better able to quantify levels of asbestos. As a result, the health-consultation reports for those sites recommended, among other things, that EPA conduct additional sampling at these sites to ensure people are not being exposed to residual fibers. After conducting

¹⁸EPA used polarized light microscopy (PLM) at most of the 28 sites to visually estimate the percent of asbestos in bulk samples. This type of analysis can distinguish between asbestos and nonasbestos fibers and different types of asbestos fibers but cannot reliably detect asbestos in low concentrations. Transmission electron microscopy (TEM), a more sensitive analytical method than PLM, was also used at some sites. TEM can distinguish between asbestos and non-asbestos fibers and asbestos types. It can be used at higher magnifications, enabling identification of smaller asbestos fibers than can be seen by other techniques. One disadvantage of this technique is that determining asbestos concentration in soil and other bulk material is difficult. Phase contrast microscopy (PCM), which is generally used to measure asbestos fibers in air samples, was used at a few sites. This is the analytical technique that many regulations are based on (e.g., occupational exposure). PCM has limited use because it cannot differentiate between asbestos and non-asbestos fibers. For this reason, it was sometimes used in combination with TEM.

additional sampling at one of these sites, EPA determined the site required further cleanup.

EPA Has Attempted to Clarify Its Asbestos Cleanup Goals and Agreed to Complete a Toxicity Assessment for the Asbestos in Libby Ore

In August 2004, the Director of EPA's Office of Superfund Remediation and Technology Innovation issued a memorandum to EPA's regions to clarify cleanup goals for asbestos. The memo stated that the original intent of the 1 percent threshold was

“to ban the use of materials which contain significant quantities of asbestos, but to allow the use of materials which would: (1) contain trace amounts of asbestos which occur in numerous natural substances, and (2) include very small quantities of asbestos (less than 1 percent) added to enhance the material's effectiveness.”¹⁹

This memo acknowledged that the widespread use of the 1 percent threshold may have caused EPA managers at cleanup sites to assume that levels below that threshold did not pose an unreasonable risk to human health. The memo stated that it is important to note the 1 percent threshold was related to (1) the limit of detection for the analytical methods available in the early 1970s and (2) EPA's decision to focus its resources on materials containing higher percentages of asbestos.

The memo further noted the threshold may not be protective of human health in all instances. It stressed that regions should not assume soil or debris containing less than 1 percent asbestos does not pose an unreasonable risk to human health and should instead develop risk-based, site-specific action levels to determine if response actions should be undertaken. However, the memo clearly stated that this information did not constitute a regulation nor did it impose legally-binding requirements on EPA.²⁰

In November 2005, EPA issued its *Asbestos Project Plan*.²¹ The plan provided a framework for a coordinated agency-wide approach to identify, evaluate, and reduce the risk to human health from asbestos exposure.

¹⁹38 Fed. Reg. 8821.

²⁰U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response Directive 9345.4-05, *Clarifying Cleanup Goals and Identification of New Assessment Tools for Evaluating Asbestos at Superfund Cleanups* (Washington, D.C., August 10, 2004).

²¹U.S. Environmental Protection Agency, *Asbestos Project Plan* (Washington, D.C., November 2005).

Among other things, the plan focused on improving the state of the science for asbestos through a number of steps, including activities to improve EPA's (1) understanding of asbestos toxicology, (2) understanding of asbestos-related exposures, and (3) ability to perform meaningful environmental sample collection and analysis.

When asked about the status of these activities and funding provided to accomplish the *Asbestos Project Plan*, EPA responded that the plan was developed only to provide an overview of various ongoing and planned agency-wide activities to address risks from asbestos, and that it was never intended as an ongoing strategy with timelines for deliverables and budget tracking features. Nevertheless, according to EPA, by pursuing activities outlined in the plan the agency has made progress in improving the state of the science for asbestos. Among other things, it has undertaken work to (1) develop a methodology for estimating the risk of lung cancer and mesothelioma from inhalation exposure to different forms of asbestos; (2) update the asbestos health-effects information contained in the EPA's Integrated Risk Information System (IRIS); (3) develop methods for identifying the presence of asbestos in vermiculite attic insulation; and (4) test an alternative method for removing asbestos from buildings.²²

In December 2006, EPA's Office of Inspector General reported that EPA had not completed a toxicity assessment of the type of asbestos found in the Libby ore and that this information was necessary to determine the safe level of exposure for humans.²³ Furthermore, the Office of Inspector General reported without such information EPA cannot be sure that the cleanup actions taking place in Libby sufficiently reduce the risk that people may become ill from asbestos exposure or, if already ill, get worse. When asked by the EPA's Office of Inspector General's staff why a toxicity assessment had not been performed, officials from EPA's Office of Solid Waste and Emergency Response (OSWER) replied that an assessment was proposed but was not performed because it was not funded and because

²²IRIS, prepared and maintained by EPA, is an electronic database containing information on human-health effects that may result from exposure to various chemicals in the environment. IRIS was initially developed for EPA staff in response to a growing demand for consistent information on chemical substances for use in risk assessments, decision-making, and regulatory activities.

²³U.S. Environmental Protection Agency, Office of Inspector General, *EPA Needs to Plan and Complete A Toxicity Assessment For the Libby Asbestos Cleanup* (Washington, D.C., December 2006).

OSWER believed the information could be obtained through completed and ongoing epidemiological studies. According to the report, however, OSWER program staff, as distinguished from OSWER senior officials, said the epidemiological studies that were ongoing and planned would not be sufficient to determine the toxicity of the asbestos in the Libby ore. As a result, the EPA Office of Inspector General recommended that EPA fund and execute a comprehensive asbestos toxicity assessment to determine (1) the effectiveness of the Libby removal actions and (2) whether more actions are necessary.

Shortly after the Office of Inspector General's December 2006 report was issued, EPA agreed to conduct additional toxicological and epidemiological studies for the type of asbestos found in the Libby ore. In January 2007, EPA convened a group of more than 30 scientists from EPA, ATSDR, and the National Toxicology Program to identify data gaps and recommend additional studies.²⁴ According to EPA, a Libby Asbestos Action Plan initiated at this meeting includes recommendations for 12 additional studies. Detailed work plans for five of these studies have been completed with consultation from other agencies and external peer reviewers. Two other studies are continuations of ongoing efforts. Detailed work plans for the remaining five studies are currently being finalized. All studies are scheduled to be completed by the end of calendar year 2009. The milestone date for completing the baseline risk assessment, including the comprehensive toxicity assessment, is the end of fiscal year 2010.

²⁴The National Toxicology Program, based in the U.S. Department of Health and Human Services, is an interagency program that was established in 1978 to coordinate toxicology testing programs within the federal government; strengthen the science base in toxicology; develop and validate improved testing methods; and provide information about potentially toxic chemicals to health, regulatory, and research agencies, scientific and medical communities, and the public.

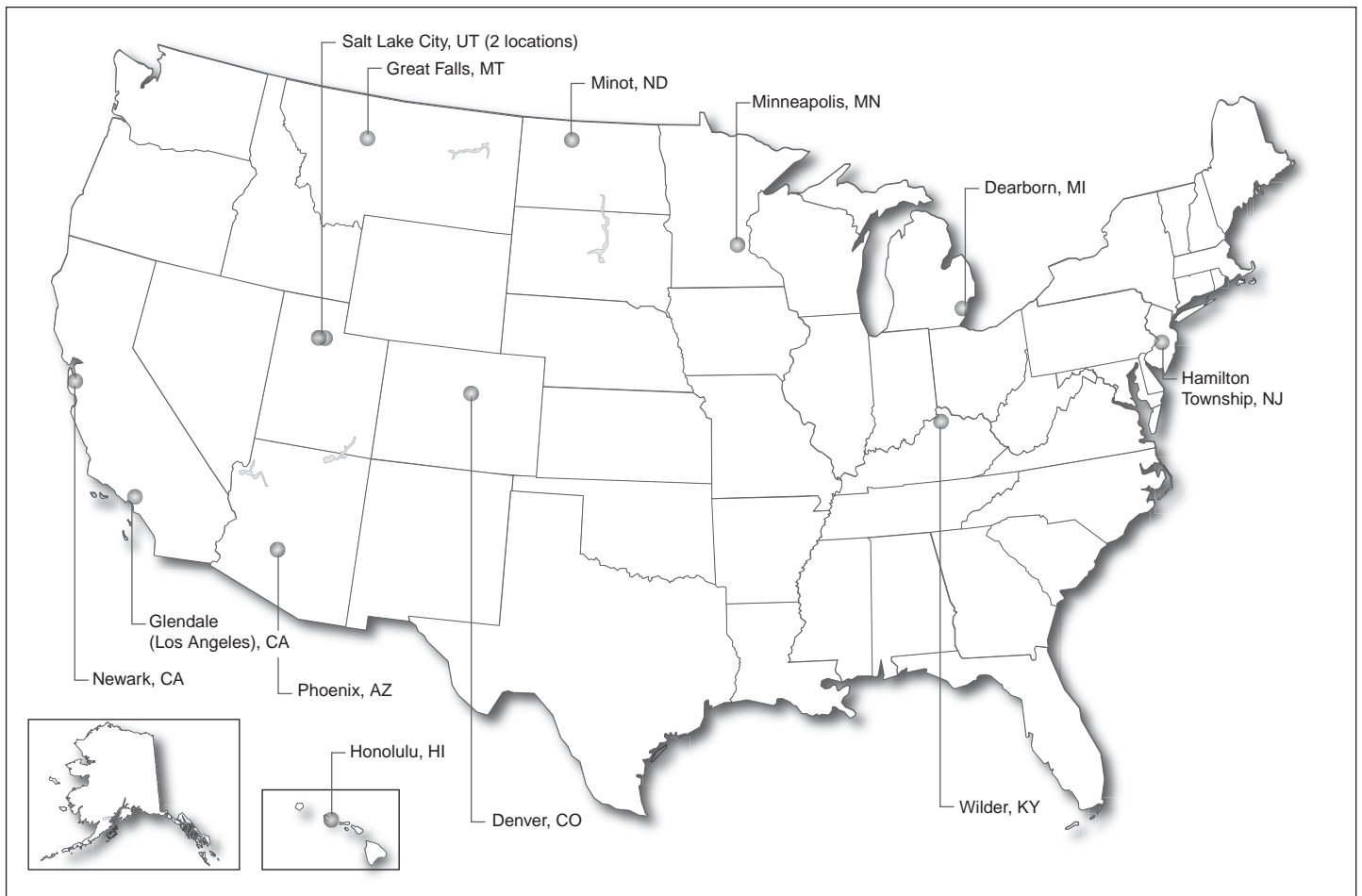
EPA Regions Did Not Consistently Implement Public-Notification Provisions and Adhere to Guidance

At most of the 13 sites for which EPA had public-notification responsibilities, EPA regions did not implement key notification provisions of NCP. At five sites, EPA regions did not perform notification activities beyond those listed in NCP, even though EPA guidance strongly recommends the regions do so. State and local government officials had mixed views about how effective EPA was in notifying them about cleanups in their jurisdictions—some state and local officials reported a positive experience working hand-in-hand with EPA, while others said EPA had not notified them at all. Similarly, while community members participating in two of three focus groups were disappointed overall in EPA’s efforts to inform them about cleanups in their neighborhoods, the participants in the third group were very satisfied with EPA’s efforts.

EPA Regions Did Not Implement Key NCP Public-Notification Provisions at Most Sites

As the lead agency responsible for notifying the public of cleanup activities taking place at 13 of the cleanup sites, EPA was required by NCP regulations to take certain steps, as appropriate, to inform the public about the cleanup activities. All 13 sites were classified as time-critical removal actions, which means EPA must begin cleanup at the sites within 6 months of determining that a removal action is appropriate. Figure 7 shows the locations of the 13 sites.

Figure 7: Vermiculite Ore Processing Sites Where EPA Was Responsible for Public Notification



Sources: EPA (information); Map Resources (map).

For all 13 sites, EPA was required to take the following public-notification steps:

- *Designate an agency spokesperson.* This representative must inform the community of actions taken, respond to inquiries, and provide information concerning the release of hazardous substances.
- *Notify affected citizens.* The spokesperson must, at a minimum, notify citizens immediately affected by the release of hazardous materials, as well as state and local officials, and when appropriate, civil defense or emergency management agencies.

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- *Create an administrative record.* EPA must establish an administrative record containing documents that form the basis for the cleanup action selected and make this record available for public review.
 - *Notify the public about the administrative record.* Within 60 days of initiating cleanup activities, EPA must publish an announcement in a major local newspaper indicating that the administrative record is available for review.
 - *Hold a public-comment period, as appropriate, and respond to comments.* From the time the administrative record is made available for review, EPA must provide the public no less than 30 days to provide comments about the cleanup. EPA must prepare a written response to significant comments.

When time-critical cleanup activities are expected to last more than 120 days, because there is more time for community involvement and outreach, NCP requires the following additional notification activities be performed, as appropriate.²⁵

- *Establish an information repository.* To provide the public easier access to site-related documents, EPA must establish at least one information repository at or near the location of the cleanup site. At least one repository must have the administrative record file available for public inspection.
- *Notify the public about the repository.* EPA shall inform the public that it has established an information repository and provide notice that the administrative record is available for review. If EPA knows that cleanup activities will extend beyond 120 days, it can publish a single public notice announcing the availability of the repository and the administrative record.
- *Conduct community interviews.* EPA must conduct interviews with local officials, community residents, public-interest groups, or other interested parties, as appropriate, to solicit their concerns, their information needs, and their views on how and when they would like to be involved in the cleanup.

²⁵Cleanups at 3 of the 13 sites (Wilder, Ky.; Minneapolis, Minn.; and one of the sites in Salt Lake City, Ut.) were expected to exceed the 120-day time limit.

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- *Prepare a Community Relations Plan.* Using information gathered from the community interviews and other sources, EPA must prepare a formal Community Relations Plan specifying the community-involvement activities the agency expects to conduct during the cleanup.

According to EPA regional officials, key public notification provisions of NCP were not implemented at 8 of the 13 cleanup sites. Specifically, regional officials told us the following:

- At the Great Falls, Montana site (Region 8), regional officials did not establish an administrative record, did not place a notice announcing the record was available for review, and did not hold a public-comment period. According to Region 8 officials, they did not create a formal administrative record because they made a mistake in processing the site's file and did not discover the mistake until after the cleanup was completed. Before the cleanup, Region 8 did provide an information packet equivalent to an administrative record to the owner of the site where the cleanup occurred and to the state of Montana.²⁶ Region 8 officials said they have since established a formal standard-operating procedure for completing such tasks, which includes assigning tasks to specific personnel and program offices within the region.
- At the Denver, Colorado site (Region 8), although officials established an administrative record, they did not notify the public that the record was available for review and did not hold a public-comment period. The omissions occurred because the employee responsible for placing the notices had retired. During the time the position was vacant, the region did not place public notices for some other removal actions. Region 8 has since filled the position and, in December 2003, it established formal procedures for setting up repositories and publishing notices; the procedures include assigning these responsibilities to specific EPA program offices and staff.
- For both the Minneapolis, Minnesota, and Dearborn, Michigan, sites (both in Region 5), the region established administrative records and placed notices about their availability, but it did not hold public-comment periods. EPA Region 5 officials explained that they do not believe that NCP requires EPA to hold a comment period for removal actions, rather,

²⁶The site was a residential property. A previous owner of this property had worked at a facility in Great Falls, Montana, that processed Libby ore. The property was heavily contaminated because the owner had taken asbestos wastes from the processing facility to his residence and used it to resurface his driveway.

they said NCP allows EPA latitude to determine whether a comment period is appropriate for removal actions. Their general view is that a comment period is not appropriate for time-critical and emergency-removal actions because they need to proceed quickly and because there is typically not a range of options to be considered. In such cases, regional officials said it is more important to focus on other community-outreach and community-relations activities.

- At the Wilder, Kentucky (Region 4), Minot, North Dakota (Region 8), and Phoenix, Arizona (Region 9) sites, regional officials posted notices of availability in local newspapers, but they did not place the notices within 60 days of the start of the cleanup as provided in NCP. At two sites, regional officials did not know why the notices were delayed. At the Minot site, the notice was placed 22 days after the deadline and 2 days after the cleanup was completed; and at the Wilder site, the notice was placed 6 days after the deadline. At the Phoenix site, regional officials said the staff person who was responsible for placing the notice had resigned and that position was still vacant at the time the notice should have been placed. The notice was placed 42 days after the deadline and 90 days after the cleanup was completed.
- At one of the sites located in Salt Lake City (Region 8), regional officials did not prepare a formal community-relations plan, even though regional officials thought the cleanup could take more than 120 days to complete. Region 8 officials explained that, at the time the memorandum justifying the need for the cleanup was issued, it would have been reasonable to expect that the initial scope of the cleanup would be completed within 120 days. Unfortunately, additional contamination was discovered during a portion of the cleanup, which required the completion date to be extended. However, the memo justifying the cleanup indicated the cleanup might exceed 120 days. Specifically, the memo stated “total costs of the removal action are anticipated to exceed \$2 million due to the size of the properties and the extensive amount of soil contamination; and the large amount of excavation and monitoring of landscape restoration may cause the removal to extend past 12 months.” Region 8 officials said that even though a plan was not prepared for this site, the region conducted all substantive community-relations activities that would have been documented in a formal community-relations plan.

decisions related to the cleanup of hazardous waste. The key guidance issued by EPA includes:

- *January 1981.* EPA issued its Public Participation Policy that provided overall guidance and direction about reasonable and effective means of involving the public in program decisions to public officials who manage EPA programs. This policy defined public participation as that part of EPA's decision-making process that provides opportunity and encouragement for the public to express their views to the agency, and assures that the agency will give due consideration to public concerns, values, and preferences when decisions are made.
- *July 1992.* EPA published public participation guidance for on-scene coordinators, who are responsible for directing cleanups.²⁷ This guidance stressed the need to (1) inform the public of the degrees and types of risks associated with a site, planned or ongoing actions, and other issues; (2) provide the public with an opportunity to comment on decisions about the site; and (3) identify and respond to community concerns.
- *April 2000.* The Director of EPA's Office of Emergency and Remedial Response instructed all EPA regional offices to contact related state or tribal and agency officials to notify them of the potential evaluations of sites that received ore from Libby, Montana, and to gather relevant information from these officials and solicit their participation in site activities.
- *April 2001.* The EPA Administrator issued a policy memorandum that endorsed "vigorous public outreach and involvement."
- *October 2001.* In an effort to encourage more substantive involvement of communities from the very outset of a cleanup, the Acting Director of EPA's Office of Emergency and Remedial Response issued a policy memorandum supporting "early and meaningful community involvement." This memo stressed that even if the cleanup is an emergency removal, community involvement should not be neglected or postponed. The memo stated that while initial calls should be to state and local authorities, soon thereafter, efforts should be made to reach out to the entire community, which may have a high level of anxiety and concern about health and safety.

²⁷The on-scene coordinator is the federal official responsible for monitoring and directing responses to all oil spills and hazardous-substance releases reported to the federal government.

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- *April 2002.* EPA issued the Superfund Community Involvement Handbook that contained detailed guidance on how to conduct public-notification activities. This guidance states that while it is up to EPA officials in charge of a site cleanup to decide what public-notification activities are needed based on a site's circumstances, EPA's experience has shown that, at most sites, just complying with NCP provisions is not sufficient to adequately meet community needs. This guidance recommends that regions use many other notification activities, such as distributing fact sheets to let residents know about EPA's activities; hosting public meetings to deliver information to large groups of people; and, if community demographics indicate a need, translating documents into appropriate languages.
 - *September 2002.* EPA issued the Superfund Community Involvement Toolkit, which provided EPA community involvement staff with practical, comprehensive, easy to use guidance for designing and enhancing community involvement activities. The Toolkit includes guidance on how to conduct both required and recommended notification activities, such as how to place public notices and how to conduct public meetings. The Toolkit indicated an expectation that EPA staff should not just distribute information to the public; it should promote meaningful citizen participation in the decisions affecting sites.

As indicated in table 2, EPA regions varied greatly in the extent to which they followed the agency's guidance for conducting public-notification activities—with 9 of the 13 sites employing at least some of the notification activities that went beyond NCP provisions. For the cleanup sites located in Dearborn and Minneapolis (Region 5), EPA engaged in many of the notification activities that are recommended by NCP provisions. For example, at the Dearborn site, EPA coordinated with the Arab Community Center for Economic and Social Services to determine the best approach for providing information about the cleanup to the Arab-American residents living near the site. EPA also distributed fact sheets, printed newspaper notices in both English and Arabic, went door-to-door to notify residents about the cleanup, and hosted two public meetings, and conducted two direct mailings. At the Minneapolis site, EPA went door-to-door to discuss the cleanup with residents, held several public meetings, and distributed fact sheets. However, for the sites located in Glendale, Newark, Phoenix, and Honolulu (Region 9), and for the first phase of the cleanup of the site in Hamilton Township (Region 2), EPA did not engage in notification activities beyond those required by NCP provisions. According to both Region 2 and Region 9 officials, even though residential areas were located near each of these sites, additional community-outreach activities were not performed because the site settings, limited

scope of the removals, and the nature of the removal activities led them to conclude that it would not be necessary.

Table 2: Summary of Public-Notification Activities beyond the NCP Provisions As Reported by EPA

Site	Distributed fact sheets or flyers to residents or business owners	Issued press releases	Went door-to-door to discuss cleanup and solicit residents' or business owners' concerns	Hosted public meetings	Placed a trailer on-site where residents could walk-in to ask questions	Used direct mail to distribute information to residents or business owners	Developed a website to provide updated information to the public about the cleanup
Dearborn, Michigan	✓	✓	✓	✓	✓	✓	✓
Denver	✓		✓				
Glendale, California							
Great Falls, Montana			✓				
Hamilton Township, New Jersey Phase I							
Phase II	✓	✓		✓		✓	✓
Honolulu							
Minneapolis	✓	✓	✓	✓	✓	✓	✓
Minot, North Dakota	✓		✓	✓	✓		
Newark, California							
Phoenix							
Salt Lake City (Intermountain Insulation)			✓				
Salt Lake City (Vermiculite Intermountain)			✓				
Wilder, Kentucky	✓	✓	✓	✓			✓

Source: GAO analysis of EPA data.

State and Local Officials' Views Varied on the Effectiveness of EPA's Public-Notification Efforts

State officials we spoke with were mostly satisfied with EPA's efforts to inform them about site cleanups in their jurisdictions. That is, state officials from 7 of 12 sites were generally satisfied with EPA's public-notification efforts (North Dakota officials did not respond to our request for their views about the Minot site).

- At five of the seven sites (Glendale, Denver, Dearborn, and the two sites located in Salt Lake City), state officials explained that when EPA is the lead agency for a site, they typically expect EPA to inform them about cleanups but do not expect to be involved in the final decision-making process. For these sites, the state officials were pleased with EPA's efforts to keep them informed about the site evaluations, sampling results, and cleanup activities.
- At the other two sites (Minneapolis and Wilder), state officials reported they worked hand-in-hand with EPA officials and were extremely pleased with EPA's efforts to keep them informed about site activities. For example, officials from the Minnesota Pollution Control Agency (MPCA) collected samples with EPA Region 5 at the Minneapolis site and officials from both agencies agreed the site needed to be cleaned up. EPA and MPCA held joint public meetings to inform residents about the contamination and went door-to-door in a wide area to determine if residents had taken contaminated waste materials from the site to their homes. Also, Minnesota Department of Health officials reported working closely with EPA and MPCA to review site cleanup plans, ensure that contractors were properly licensed, and obtain access to residential properties so they could be tested for the presence of asbestos. Similarly, for the Wilder site, officials from the Kentucky Department of Environmental Protection (KYDEP) reported that EPA Region 4 officials continually communicated through e-mails, telephone calls, written correspondence, and meetings. KYDEP officials worked closely with EPA at the site, providing general oversight on the cleanup, including removal and disposal of the asbestos-contaminated materials. They coordinated with EPA on all aspects of the planned removal and reported that EPA staff were very professional, knowledgeable, helpful, courteous, and visible.

For three sites (Honolulu, Great Falls, and Hamilton Township), state officials said they were not satisfied with EPA's efforts to inform them about cleanup activities.

- *Honolulu.* Officials from the Hawaii Department of Health (HDOH) said that an EPA Region 9 official stopped by their offices and mentioned that the Honolulu site had received vermiculite ore from Libby, Montana.

About a year later, HDOH officials said they were copied on a letter from Region 9 stating that there had been a release of asbestos at the site. Subsequent to receiving this letter, an EPA Region 9 official stopped by the HDOH offices “as a courtesy” to let them know EPA would be conducting a removal action at the site. However, HDOH officials said they did not receive any more information from EPA about the site and that they would have preferred having more advance notice about the cleanup and information about the status of the cleanup as it was being conducted.

- *Great Falls.* An official from the Montana Department of Environmental Quality (MDEQ) was very dissatisfied with EPA Region 8’s lack of notification about the cleanup. The site was a residence that was being cleaned up because a former owner of the property who had worked at a vermiculite processing facility in Great Falls had taken contaminated waste product home to use on his driveway. The MDEQ official first became aware of the site through an asbestos-abatement contractor who had heard about the cleanup. The MDEQ official said he went to investigate the site because EPA typically coordinates such matters with him. The MDEQ official said he was not sure why EPA did not inform him about the cleanup, but he considered this “slipshod” behavior.
- *Hamilton Township.* Officials from the New Jersey Department of Environmental Protection (NJDEP) said they first learned the site was contaminated with asbestos when they were copied on an EPA Region 2 memorandum stating that the site needed to be cleaned up. They said they received copies of two more EPA reports about the site before being invited to a stakeholder meeting in March 2005 (approximately 1 year after the completion of the first phase of the site cleanup) to discuss the site cleanup.²⁸ The NJDEP officials said that EPA had improved its public-notification efforts during the second phase of the site cleanup. For example, since the beginning of the second phase, EPA has held several public meetings and issued numerous community updates. The NJDEP officials felt that EPA should have notified them and local government officials about the first phase of the cleanup in the same manner as was done for the second phase. In general, NJDEP officials said EPA could improve public-notification efforts by, among other things, providing additional public notices to state and local officials, keeping the site’s Web site up-to-date, and by asking for and obtaining feedback from community

²⁸Due to funding limitations, this removal was conducted in two phases. Phase I was initiated in November 2003 and completed in April 2004. Phase II was initiated in August 2006.

members about what their notification needs are, and then providing this information to state and local agencies.²⁹

For the remaining sites in Phoenix and Newark, state officials said they were neither entirely satisfied nor entirely dissatisfied about Region 9's efforts to inform them about the site cleanups. Specifically, officials from the Arizona Department of Environmental Quality said they received a report from Region 9 indicating that EPA was assessing sites that had received Libby ore and that the Phoenix site was being assessed. A letter accompanying the report indicated the Phoenix site would be cleaned up, but did not indicate when the cleanup would occur. While Arizona officials found it helpful that EPA kept them informed about the assessments of sites that had received Libby ore, they said it would have been better if EPA had informed them ahead of time about when the Phoenix site would be cleaned up so they could have been better prepared to answer the public's questions about the cleanup. For the Newark site, an official from the California Department of Health Services said EPA did not provide any information to them directly about the site. Instead, they received most of their information from ATSDR, who they understood was working closely with EPA. Since the California Department of Health officials' view their role in such situations as providing support to ATSDR, the official said the Department would not necessarily expect EPA to notify it about site cleanups. However, as a part of its efforts to help ATSDR disseminate information to communities, in September 2003, the California Department of Health found that officials in the City of Newark and in the county government were not aware of the cleanup or the site's history (the site cleanup began in April 2002).

Of the seven local governments that provided their views on EPA's efforts to inform them about cleanups within their jurisdictions,³⁰ three (Dearborn, Minneapolis, and Salt Lake City) said they were satisfied.

- *Dearborn.* City officials said EPA Region 5 did everything that could have been done to inform the public about the cleanup. According to these

²⁹EPA Region 2 officials indicated they had additional contacts with NJDEP officials during which the Hamilton site was discussed. NJDEP reviewed EPA's written account of the additional contacts. NJDEP officials stated that they continue to maintain that EPA's notice to NJDEP of the Phase I removal action at the site could have been better and that they agree with GAO's summary of their views as presented in this report.

³⁰Local government officials for the other five sites either declined to provide their views or did not respond to our request for their views.

officials, EPA informed the mayor's office very early in the process and asked the city to appoint a liaison to work with EPA on the site cleanup. City officials also said EPA met with local government officials and the emergency-management coordinator to determine any concerns they might have. Overall, city officials thought EPA was professional, in control of the situation, and cognizant that they needed to maintain frequent contact with the residents.

- *Minneapolis.* City officials said they already had a good working relationship with EPA Region 5 and were impressed with EPA's efforts to be open and available to the community through, among other things, public meetings and door-to-door contacts. They said that EPA was very upfront with city officials, established good credibility with members of the community, and was respected by local activist groups.
- *Salt Lake City (two sites).* Officials from the Salt Lake City government said EPA's interaction with the local government was excellent and EPA staff were always accessible to discuss their concerns. EPA Region 8 staff first called them to explain that the sites had processed asbestos-contaminated ore from Libby and were likely contaminated. When the city public utility offices raised concerns about whether contamination under the streets near one of the sites was a threat to their employees, EPA met with them to address their concerns. Once EPA began the removal action, EPA kept the local government informed via weekly e-mails, three meetings, and a site visit.

There were four sites (Newark, Wilder, Great Falls, and Hamilton Township) where local government officials said they were somewhat to largely dissatisfied with EPA's notification efforts.

- *Newark.* A city official said a Newark Fire Department official first found out about the site cleanup from county health department officials and the California Department of Health.³¹ After hearing about the contamination and activities at the site, the fire department official informed the city manager and the city's executive team. The city officials said that EPA Region 9 had very little contact with the local government as the cleanup proceeded.

³¹A county health department official also reported that they did not receive any information from EPA about the Newark site.

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- *Wilder.* A city official said he first learned about the site from a local newspaper reporter and that EPA Region 4 notified the city after it decided to clean up the site. According to this official, if the city had known earlier, it could have cordoned off the area to prevent children from riding their bikes through the site. The city official was also concerned that EPA did not do enough to contact former workers and identify people who took asbestos-contaminated waste rock from the site to use in their yards.
 - *Great Falls.* A city official at the Great Falls site said EPA Region 8 did not notify the city about the cleanup. After finding out about the cleanup from an asbestos-abatement contractor, the city official decided to investigate the site. The city official discovered the EPA contractor performing the removal was not licensed to do work in the city.³² In the opinion of the city official, EPA should have notified the state government about cleanup activities and should have asked the local government to appoint a liaison to work with EPA on matters concerning the cleanup.
 - *Hamilton Township.* During Phase I of the cleanup, township officials said EPA Region 2 invited an official from the Hamilton Township Department of Health to attend a visit to the site. During this visit, township officials said the city health department official was told that EPA was going to clean up the site. Township officials said that other than EPA's request for a permit to place a construction trailer on the site, they did not receive any further communication until after the first phase of the cleanup was completed. At that time, township officials said the New Jersey Department of Health asked the Hamilton Township Department of Health to help organize a public meeting about the second phase of the cleanup; the Hamilton Township Department of Health then informed the mayor's office about the cleanup. According to township officials, while EPA did place an administrative record for the site in the local library, the agency did not notify local officials that it was available for review. Township officials said that since the second phase of the cleanup began, EPA has been doing a "great job" keeping local officials informed. According to township officials, the catalyst for change was getting the mayor's office involved in the cleanup. In their opinions, because staffs in mayors' offices can help ensure communities are informed and that all parties are working together, it is important for EPA to keep mayors' offices informed about cleanup activities.

³²In commenting on this report, EPA stated that it is not required to use contractors licensed with a particular city or to obtain permits.

Many Community Members Believe EPA Should Have Done More to Notify Them about Cleanups

Ultimately, it is the affected community members who most need information about the health risks posed by the presence of asbestos contamination in their neighborhoods. Accordingly, to obtain detailed insights into the effectiveness of EPA's efforts to reach these individuals, we conducted focus groups at three sites—Hamilton Township, New Jersey; Minot, North Dakota; and Dearborn, Michigan.³³ We discussed five key issues at these locations: (1) how the community members first became aware of the cleanup; (2) the content, visibility, and usefulness of the public notices EPA placed to inform the community about the cleanups; (3) overall views of EPA's efforts to notify the community about the cleanup; (4) information about site cleanups that community members need; and (5) the best methods to reach out and inform affected members of the community. Overall, participants in Dearborn were supportive of EPA's efforts, but their counterparts at the other two sites generally characterized EPA's notification efforts as ineffective.

How Community Members First Became Aware of Cleanups

According to the NCP provisions, EPA must at a minimum notify immediately affected citizens and others of cleanup activities. EPA notification guidance recommends that EPA perform outreach and other community-involvement activities as early as possible. For example, the guidance suggests EPA could meet with local officials, media, and residents during the initial site assessment to explain EPA's removal program. At two of the three sites, however, most discussion group participants said EPA did not notify them about the cleanups before they began. At Minot, nearby residents said they did not know anything about the cleanup until they saw contractors in "space suits" working at the site. At Hamilton Township, most focus-group participants said they found out about the site cleanup through articles in local newspapers. In contrast, participants in the Dearborn focus group said they first heard about the cleanup when EPA officials canvassed the neighborhood delivering letters explaining what was happening at the site and through public meetings in the neighborhood.

Content, Visibility, and Usefulness of Public Notices

The NCP public-notification provisions state that within 60 days of initiation of cleanup activities, EPA must publish an announcement in a major newspaper indicating the administrative record, which discusses EPA's planned cleanup action, is available for public review. Furthermore,

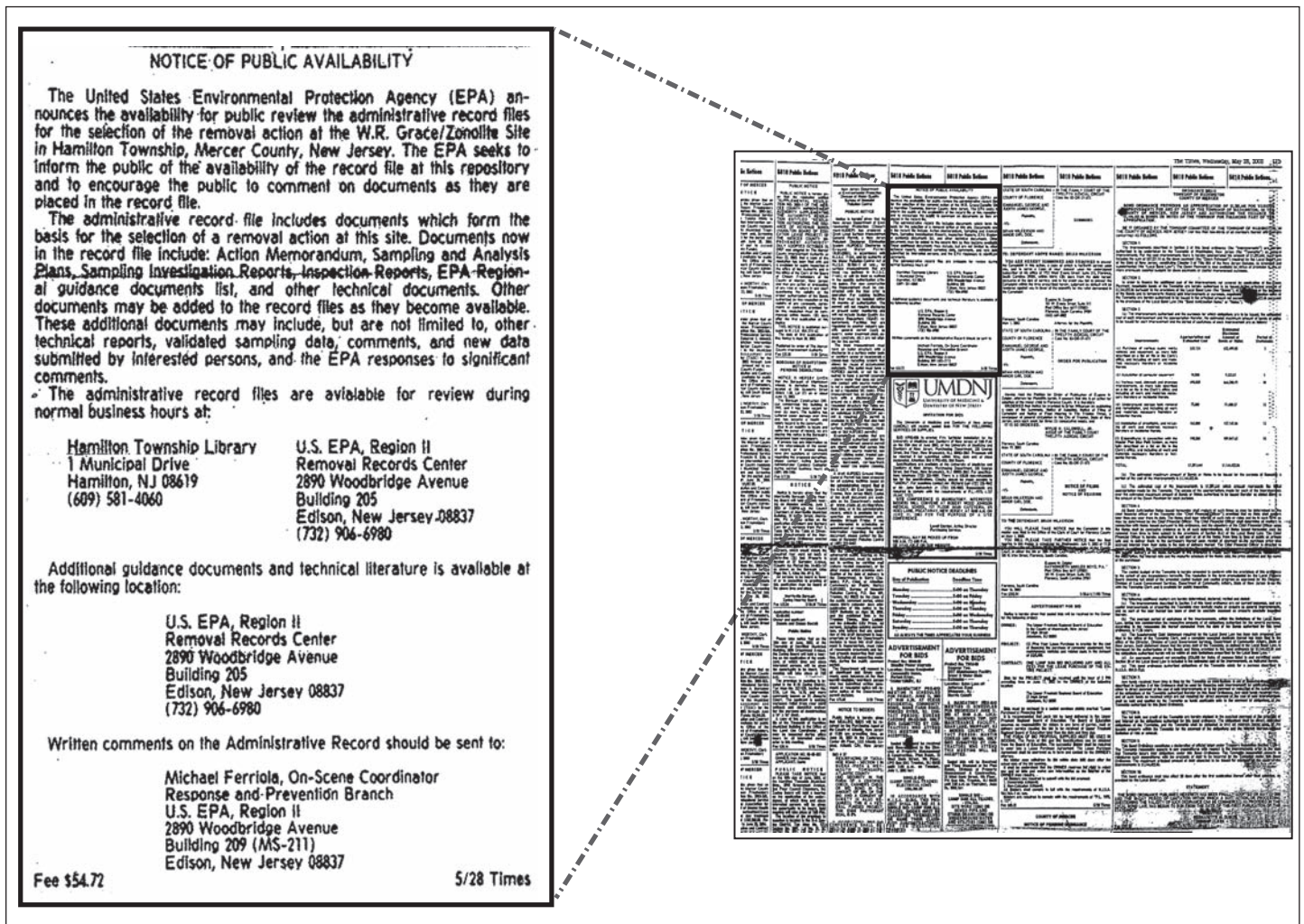
³³We also conducted a focus group in Wilder, Kentucky, but decided not to use the results of this focus group. Our approach in selecting focus group sites, the procedures used in conducting these focus groups, and reasons for not using the results of the Wilder group are discussed in detail in appendix I.

the provisions state that EPA must provide a public-comment period, as appropriate, of not less than 30 days from the time the administrative-record file is made available for public inspections. EPA guidance describes critical information that should appear in public notices and states that they should contain (1) background information about the site, which may include the location of the site and the contaminant involved; (2) the location of the information repository and the hours during which the repository is open; (3) the dates of the public comment period, if applicable; (4) the time, date, and location of the public meeting, if applicable; and (5) the name of the agency contact to whom written comments on the administrative record file should be addressed. The guidance also states that public notices should be placed in well-read sections of newspapers and specifically indicates that if a well-written notice is hidden in the classified section of a newspaper, it will not reach many people. The guidance also recommends using a simply-stated message in easily understood language. It even includes WordPerfect[®] templates of public notices with graphics to help regional staff easily modify the text to fit site-specific needs.

Based on this guidance, the notices EPA placed for all of the three focus-group sites were deficient in some respects. In particular, the notice for the Hamilton Township site did not give the address of the site, did not mention the contaminant of concern, and did not provide the dates of the public-comment period. This notice also appeared in the classified section of a local newspaper among many other classified advertisements. Figure 8 shows the content and placement of the Hamilton Township notice. Although the notice for the Minot site appeared in a well-read section of a local paper, it appeared in very small print, did not contain the contaminant of concern, or the dates of the public-comment period. In contrast, the notice for the Dearborn site appeared in well-read sections of multiple newspapers and contained all the critical information except the hours during which the repository would be open (see fig. 9).³⁴

³⁴Since EPA Region 5 decided not to hold a public-comment period for this site, the Dearborn notice did not contain the dates of the public-comment period. GAO did not consider this a deficiency of the notice itself.

Figure 8: Content and Placement of the Hamilton Township Notice



Source: Times of Trenton, May 28, 2003.


Note: This is the EPA public notice for the Hamilton site that appeared in the classified section of a local newspaper.

We asked participants from the three focus groups to evaluate the usefulness of the public notices that EPA had placed for the sites in their neighborhoods. Focus group participants at two of the sites (Hamilton Township and Minot) said they did not see the notices when they were published. After examining the notices during the focus-group meetings, all the participants said the notices did not indicate a threat to their health, did not leave them with the impression that they were to seek out

additional information, or that there was a site in their neighborhood contaminated with a hazardous material. For the Hamilton Township site, one participant said the notice gave the impression that all the studies had been completed and nothing more was to be done. For the Minot site, the participants said the notice was in such small print that it would be hard to find in a newspaper, especially if the notice ran for only one day. Another participant from Minot said they would probably ignore the notice because it does not convey useful information and is very bureaucratic and vague. After examining the Minot notice, one participant who owns a business in the city commented, "I run ads for a living, and if I ran ads like that, our company would've been broke a long time ago."

All but one of the participants in the Dearborn focus group said they had seen the notice for the site when it was published, and all the participants commented that it was placed in a well-read section of a newspaper and conveyed useful information up front. This information included the address of the site, the contaminant involved, essential information about a public meeting, and contacts for further information. When the Dearborn group compared the notice for that site with the Hamilton Township notice, they commented that the Dearborn notice was much clearer and the Hamilton Township notice lacked key information, such as the location of the site and the contaminant of concern.

Figure 9: Content and Placement of the Dearborn Notice



Work to begin and meeting to be held for former W. R. Grace site Dearborn, Michigan

EPA contractors will begin moving equipment and mobile offices to the former W. R. Grace site at 14300 Henn St., Dearborn. This is for work towards cleaning up asbestos particles in and around the former vermiculite (asbestos) site there.

EPA will also be talking with residents and homeowners the week of April 4 to find out whether any of the asbestos-tainted vermiculite material could have made its way into yards. EPA is primarily concerned about the residential area bounded by Chase Road on the west, Schaefer Road on the east, Ford Road on the south and the railroad tracks and Warren Avenue to the north.




EPA is hoping to have contacted these residents and homeowners **no later than April 8** in order for the work to proceed on schedule. In addition to contacting residents individually, EPA employees will be leaving instructions in the doors of the homes they visit. One item being left is a small card for the resident/owner to fill out and drop into a box located by the Henn Street site trailers. This card will let EPA know the best time to contact the resident/owner. There are also two toll-free numbers to reach EPA: (866) 242-3224 or (800) 621-8543 ext. 67478. Locally, the number to the Arab Community Center for Economic and Social Services (ACCESS) facility is (313) 216-2227.

EPA will hold a **public meeting** in the auditorium at Fordson High School, 13800 Ford Road, Dearborn, **Tuesday, April 5, from 6:30 p.m. to 8:30 p.m.** You should enter the meeting from the southeast corner of the building in the east parking lot and follow the signs. At the meeting we will discuss the work being done in the neighborhood and how we can make this project easier on you. Joining us at the meeting will be our project partners, Michigan Department of Community Health, the federal Agency for Toxic Substances and Disease Registry, Michigan Department of Environmental Quality and others. We will also be available individually to talk about your property.

Technical information for the former W.R. Grace site can be found in the official site administrative record at Henry Ford Community College, Eshleman Library reference section, 5101 Evergreen Road., Dearborn.

For information and special accommodation for the meeting, or about the project in general, please contact:

Dave Novak
EPA Community Involvement Coordinator
(800) 621-8431 Ext. 67478.
Weekdays 10 a.m. to 5:30 p.m.

Source: Heritage Newspapers/Press and Guide, March 30, 2005.

Note: This is the EPA public notice for the Dearborn site that appeared in the news section of a local newspaper.

Views on EPA's Overall Efforts to Notify the Community about the Cleanups

For two of the three focus groups (Hamilton Township and Minot), participants reported that EPA's efforts to inform them about the cleanups were largely ineffective. For the Hamilton Township site, most of the participants said they did not receive any fliers or any other information from EPA about the cleanup. None of the participants in the Minot focus group said they had heard anything about the cleanup before it began, even though they all lived close to the site. None said they had received

any fliers or saw EPA officials walking around the neighborhood. One participant, whose backyard borders the site, said he noticed workers in hazmat suits working at the site and asked them what they were doing. The participant said the engineer in charge of the cleanup provided him with information and agreed to set up air monitors to ensure that he and his neighbors were not exposed to elevated levels of asbestos during the cleanup. None said they had heard about the administrative record for the Minot site or about any opportunities for providing comments to EPA.

In contrast, participants in the Dearborn focus group said EPA effectively informed the community about the cleanup. They reported that EPA held several public meetings and even had a wrap-up meeting after the cleanup was completed. The participants said all the notices, fliers, and letters had contact information on them in case the residents had questions, and EPA had an information trailer at the cleanup site where residents were welcome to stop in with their questions. In addition, according to the participants, EPA officials were always readily available to respond to concerns. For example, when EPA became concerned that some residents might have taken the contaminated waste product home to use in their yards, the participants said EPA walked around the neighborhood and hand delivered letters asking permission to access people's properties for inspection. Also, according to one participant, when some residents expressed concern about the spread of contamination during windy conditions, EPA set up monitors and stopped work at the site when the wind speed went above a certain level. Finally, because of the number of Arab-American residents in the community, participants said EPA provided notices and letters in both English and Arabic.

Information That Community Members Need about Site Cleanups

For those focus-group participants who did not have an opportunity to ask EPA questions about the site cleanups, we asked what information they would have wanted EPA to provide. While Dearborn participants said they had ample opportunities to ask EPA questions and received the information they needed, participants in the other two focus groups (Hamilton Township and Minot) said they would have asked questions about the following:

- *Sampling*, including what areas EPA sampled; whether there would be any off-site sampling; the results of the sampling; and how they could be sure their property was not contaminated.
- *Conduct of the cleanup*, including what areas are being cleaned up; how the soil will be removed and what precautions will be taken to keep asbestos fibers from becoming airborne; how EPA will dispose of the

contaminated dirt; whether there will be a follow-up information session after the cleanup is completed; and whether there will be continued monitoring for a designated period of time after the cleanup.

- *Health risks*, including what health risks are associated with the site cleanup; what health risks are present before the site is cleaned up; who the contact is for questions about the risks and health effects associated with asbestos exposure.

Best Methods to Inform Affected Members of the Community

In the three focus groups, community members suggested several methods of notification that would have helped them understand the situation. In general, participants from all focus groups thought using multiple methods of communication would help ensure that more people are informed about cleanups. One participant pointed out, for example, if someone does not read a notice about a cleanup in a newspaper, they might find out about it instead by reading a flier that is placed on their door. Participants from all three groups agreed that fliers, letters, public meetings, and door-to-door contacts were effective. Some in the Hamilton Township focus group commented that since they received automated phone calls to remind them to vote, perhaps it would be possible for EPA to provide information about cleanups in a similar fashion. The importance of including contact numbers on all handouts, fliers, and letters was stressed by some participants in the Dearborn focus group. In addition, some of the Dearborn participants said that it was useful to have the trailer at the cleanup site.

Conclusions

To its credit, EPA has agreed to undertake a risk and toxicity assessment for the type of asbestos found in Libby ore. It expects to complete the assessment in 2010. Until then, EPA cannot be assured that of the 271 sites that it assessed, only 19—those generally exceeding thresholds for asbestos contamination—need to be cleaned up; nor can it be assured that the sites still having detectable levels of asbestos do not pose a risk to public health and the environment. As we noted, the thresholds EPA used are not health based. Furthermore, the methods EPA used to determine levels of asbestos contamination early in its assessment process are not as accurate as currently available methods. Resampling the sites that EPA initially sampled with these newly available and more reliable sampling and analytical techniques would be a major commitment for EPA; this step may nonetheless need to be taken for at least some of these sites to provide a more accurate assessment of the threats they pose. Hence, in addition to identifying a defensible health-based threshold, EPA will also

need to determine the implications of the new sampling and analytical techniques to determine which sites may still need to be cleaned up.

Community members who live and work near sites where hazardous materials are being removed need to understand how cleanups are being conducted and have opportunities to voice any concerns they have. While EPA has recognized the need to obtain early and meaningful community involvement in cleanup decisions, and taken actions in recent years to strengthen its efforts to inform the public, we found that at the 13 sites where asbestos contamination from Libby ore was being cleaned up, several of the EPA regions did not fully implement NCP notification provisions and some did not adhere to the notification guidance. We believe this provides sufficient indication that similar problems may be occurring at other cleanup sites nationwide where EPA is responsible for conducting public-notification activities. Also, the feedback that we received during focus groups from community members living and working near cleanup sites indicates, among other things, that the notices EPA relies on to inform community members about cleanup activities were deficient in some respects.

Recommendations for Executive Action

We recommend that the EPA Administrator direct the Assistant Administrator for Solid Waste and Emergency Response to determine (1) the manner and extent to which newly available sampling and analysis techniques should be used to re-evaluate the threat that the sites receiving Libby ore may pose to human health, and (2) whether any additional sites that received the Libby ore need to be cleaned up when the results of the risk and toxicity assessment—now scheduled to be completed in 2010—are available.

We also recommend that the Administrator direct the Office of Solid Waste and Emergency Response to review regional offices' implementation of the National Contingency Plan public-notification provisions and associated guidance and ensure that, in the future, (1) regional offices appropriately determine the extent of community outreach needed and (2) newspaper notifications are prominent and written in clear language that contains all critical information, such as the name of the contaminant, the location of the site, and the associated health risks.

Agency Comments and Our Evaluation

We provided a draft of this report to EPA and ATSDR for comment. EPA responded in a letter dated September 21, 2007, which indicated that it generally agreed with our recommendations and said that the agency is taking steps to address many of the issues identified in the report. Both EPA and ATSDR also provided technical comments which we incorporated as appropriate. Appendix II includes EPA's September 21, 2007 letter, along with our point-by-point response to their individual comments.

We are sending copies of this report to the congressional requesters and other interested parties. In addition, we will send copies to the EPA Administrator, the Secretary of Health and Human Services, and the Secretary of Labor. We will also make copies available at no charge on the GAO Web site at <http://www.gao.gov>.

If you or your staffs have questions about this report, please contact me at (202) 512-3841 or stephensonj@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. Key contributors to this report are listed in appendix III.



John B. Stephenson
Director, Natural Resources
and Environment

Appendix I: Objectives, Scope, and Methodology

We were asked to (1) describe how the U.S. Environmental Protection Agency (EPA) and other federal agencies assessed and addressed potential risks at the facilities that received asbestos-contaminated vermiculite ore from a mine in Libby, Montana, and the results of these efforts; and (2) determine the extent and effectiveness of the EPA regions' efforts to notify the public about the cleanup of facilities that received the contaminated ore.

Due to concerns of the Department of Justice and EPA that our work could impact an ongoing federal criminal case against W.R. Grace—the company that owned the vermiculite mine in Libby, Montana, and some of the processing facilities that received ore from Libby—and the need to avoid undue influence in the case, we designed our methodology to minimize direct contact with EPA staff.¹ Accordingly, we obtained most of the information we needed about EPA's assessments of the sites that received Libby ore and the agency's public-notification activities at the sites that were cleaned up by submitting questions to EPA in writing; the agency provided written responses. We did not further pursue access to this information because we had sufficient data to respond to our objectives.

EPA's Assessment of Sites

To address the first objective, we obtained from the U.S. Department of Health and Human Services' Agency for Toxic Substances and Disease Registry (ATSDR) a table of sites that had potentially received contaminated ore from Libby, Montana. This table was largely based on data that ATSDR received from EPA about each of the sites identified as receiving ore from the Libby mine. The table included, for each site, the location, type of facility, and limited information on the status of EPA's assessments of the sites as of April 2003. The table also included information on the amount of ore received by each site as of April 2001. After revising the table to include only the information needed to address our objectives, we sent the revised table to EPA and requested that EPA verify, update, and complete the information in the table. We also submitted in writing a set of questions to clarify the data in the table and a set of questions to assess the reliability of the information in the table for the purposes of our report, focusing mainly on the data about the amount of ore received by each site.

¹*United States v. W.R. Grace*, Crim. No. 05-07, D. Mont., filed Feb. 7, 2005.

From March 2006 to May 2007, through a series of correspondences, we obtained EPA's responses to our written questions and information about the site data, which are reflected in this report. Based on EPA's responses regarding the accuracy and completeness of the information in the table of sites, we determined the data are adequate to provide conservative estimates of the amount of ore received by each site.

We also collected and analyzed relevant documentation about sites from EPA's Superfund record centers, which are public repositories. In addition, we collected and analyzed ATSDR's health consultations prepared for selected sites that received ore from Libby, Montana.

We also obtained and analyzed several documents that relate to EPA's actions to clean up sites in Libby, Montana, and the sites that received Libby ore. These documents included: the National Contingency Plan (NCP) regulations that implement the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA); February and April 2000 memoranda from EPA's Director of the Office of Emergency and Remedial Response to all EPA regions regarding assessment of sites that received Libby ore; 2001 EPA Office of Inspector General's report entitled "EPA's Actions Concerning Asbestos-Contaminated Vermiculite in Libby, Montana"; GAO's 2003 report entitled "Hazardous Materials: EPA's Cleanup of Asbestos in Libby, Montana and Related Actions to Address Asbestos-Contaminated Materials"; and an August 2004 memorandum from the Director of EPA's Office of Superfund Remediation and Technology Innovation to EPA regions regarding clarification of asbestos cleanup goals.

EPA's Public-Notification Efforts

To address the second objective, we limited our review to the 13 sites that were being cleaned up and for which EPA had public-notification responsibility. These sites were located in Phoenix, Arizona; Glendale and Newark, California; Denver, Colorado; Honolulu, Hawaii; Wilder, Kentucky; Dearborn, Michigan; Minneapolis, Minnesota; Great Falls, Montana; Minot, North Dakota; Hamilton Township, New Jersey; and two sites located in Salt Lake City, Utah. We interviewed officials from EPA's Office of Solid Waste and Emergency Response to obtain general information about public-notification provisions to which EPA is subject and any guidance that EPA has issued instructing regional offices about their responsibilities for complying with these provisions. In April 2006, we submitted structured questions in writing to EPA's headquarters and 10 regional offices to determine compliance with public-notification provisions and any additional community-notification efforts that took

place at the 13 sites. From April 2006 to May 2007, through a series of correspondences, EPA provided responses to these questions and various follow-up questions in writing.

We developed sets of structured questions to assist in obtaining state and local government officials' perspectives on the public notification that took place in communities where cleanups occurred. To identify the state and local government agencies involved in the cleanups and officials in those agencies most knowledgeable about the notification that took place at each site, we obtained some names from the administrative records for the sites being cleaned up. In some cases, we asked EPA to provide the names of state and local agencies or officials they worked with during the cleanups. For sites where we only had the name of an agency, we called the agency and asked for the person who would be most knowledgeable about the site. We conducted these interviews in person and by telephone. We interviewed officials in the following state offices: Arizona Department of Environmental Quality, California Department of Toxic Substances Control and California Department of Health Services, Colorado Department of Public Health and Environment, Hawaii Department of Health, Kentucky Department for Environmental Protection, Michigan Department of Environmental Quality, Minnesota Department of Health and Minnesota Pollution Control Agency, Montana Department of Environmental Quality, New Jersey Department of Environmental Protection and New Jersey Department of Health and Senior Services, and the Utah Department of Environmental Quality.² We also interviewed officials from the following local governments: Newark, California; Alameda County, California; Wilder, Kentucky; Dearborn, Michigan; Minneapolis, Minnesota; Great Falls, Montana; Hamilton Township, New Jersey; Minot, North Dakota; and Salt Lake City, Utah.³

To obtain community members' perspectives on the extent and effectiveness of EPA's public-notification efforts, we conducted focus groups to gather qualitative information about their attitudes, beliefs, and perceptions. Four focus groups were conducted in Wilder, Kentucky; Dearborn, Michigan; Minot, North Dakota; and Hamilton Township, New Jersey to ensure geographic diversity. In order to help compare

²Officials from the North Dakota Department of Health did not respond to our request for an interview regarding the site located in Minot, North Dakota.

³For the Phoenix, Glendale, Denver, and Honolulu, either the officials contacted did not respond to our request for an interview or they declined our request.

notification practices across EPA regional offices, we selected sites that were located in different EPA regions. Other criteria for selection included the amount of ore received and whether the cleanup action had been completed or was ongoing.

We contracted with a marketing research firm, Marketing Systems Group, to obtain randomly selected names, addresses, and telephone numbers of 100 community members who lived or worked within a half-mile radius of each of the sites. We mailed a letter and brief questionnaire to each randomly selected community member to provide them some background information about our study, obtain information about the number of years they had lived in the communities, and determine whether they would be willing to participate in a focus group. We contacted the community members who returned questionnaires indicating they would be willing to participate. To increase the number of focus-group participants, we called the community members who did not return questionnaires, to determine if they could participate. We also contacted former workers and their family members who lived in each community to determine if they would be willing to participate in focus groups. The focus groups had between 4 and 14 participants.

In conducting the focus groups, the focus-group moderator encouraged the participants to speak freely. Following a GAO-developed discussion guide, the moderator asked the participants to give their perspectives on (1) how they first became aware of the cleanups, (2) the content and usefulness of public notices about the cleanups, (3) EPA's overall efforts to notify their communities about the cleanups, (4) information that the community members need about site cleanups, and (5) best methods for informing them about the cleanups.

While generating mailing lists for the focus-group sites, the contracting firm inadvertently provided contact information for residences that lived over one-half mile from the Wilder site. After the error was discovered, the contractor provided corrected contact information for residences within a half-mile of the site. However, because the people who attended the Wilder focus group were either former workers or residents who lived more than one-half mile from the site, we decided not to include the results of that focus group in this report.

We also obtained and analyzed several documents that related to EPA's responsibilities for notifying the public about cleanups at sites that received Libby ore. These documents included: the public-notification provisions of the NCP regulations that implement CERCLA as amended;

EPA's 1981 Public Participation Policy; EPA's 1992 Public Participation Guidance for On-Scene Coordinators; EPA's 1997 guidance on Publishing Effective Public Notices; EPA's 2002 Superfund Community Involvement Toolkit; EPA's 2002 Superfund Community Involvement Handbook; and EPA's FY 2006/2007 Superfund Program Implementation Manual.

We performed our work from August 2005 to October 2007 in accordance with generally accepted government auditing standards.

Appendix II: Comments from the Environmental Protection Agency

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



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
SOLID WASTE AND EMERGENCY
RESPONSE

SEP 21 2007

Mr. John B. Stephenson, Director
Natural Resources & Environment
Government Accountability Office
441 G. Street, NW, Room 2135
Washington, D.C. 20548

Dear Mr. Stephenson:

Thank you for the opportunity to review the Draft GAO-07-1008 Report entitled "Hazardous Materials: EPA May Need to Reassess Sites Receiving Asbestos-Contaminated Ore from Libby, Montana, and Should Improve Its Public Notification Process". We generally agree with the recommendations in the report and are taking steps to address many of the issues identified by GAO.

In addition to our response provided below to the GAO recommendations, we have also included additional detailed comments on the draft report in an effort to more accurately present the Agency's activities.

I. EPA's Response to GAO's Recommendations

GAO Recommendation 1:

We recommend that the Administrator, EPA, direct the Assistant Administrator for Solid Waste and Emergency Response to (1) determine the manner and extent to which newly available sampling and analysis techniques should be used to reevaluate the threat that the sites receiving Libby ore may pose to human health and (2) when the results of the risk and toxicity assessment - now scheduled to be completed in 2010 - are available, to determine whether any additional sites that received Libby ore need to be cleaned up.

EPA Response:

Historically, asbestos has been addressed in the Superfund program by applying the definition of asbestos-containing material (ACM) contained in the National Emissions Standard for Hazardous Air Pollutants (NESHAP). Under the NESHAP, ACM is material containing > 1% asbestos as analyzed by polarized light microscopy (PLM). OSWER Directive 9345.4-05 (Clarifying Cleanup Goals and Identification of New Assessment Tools for Evaluating Asbestos at Superfund Cleanups, EPA 2004), which was released in August 2004, indicated that the 1% definition may not be reliable for assessing potential human health hazards from asbestos contaminated soils at hazardous waste sites, and that

instead a risk-based, site-specific action level is appropriate when evaluating response actions for asbestos.

The 2004 OSWER Directive was instrumental in steering asbestos investigations to a risk-based paradigm. However, it did not provide guidance for investigating and evaluating asbestos risk at sites. EPA believes that further work is needed in this area and a recently developed draft Asbestos Site Assessment Framework (i.e., draft report: Framework for Investigating Asbestos-Contaminated Superfund Sites - a report by the Asbestos Committee of the Technical Review Workgroup (TRW) of the Office of Solid Waste and Emergency Response) provides systematic procedures for consistently evaluating asbestos sites and could serve to provide a technical basis for addressing the GAO recommendation to reevaluate sites receiving Libby ore. The document (1) provides a recommended flexible framework for investigating and evaluating asbestos contamination that can be used for removal and remedial actions within the Superfund program, and (2) it provides detailed recommended standard operating procedures (SOPs) for collecting data on the nature and extent of asbestos contamination at Superfund sites. The framework discusses specific strategies and methods that are based on the best available science for characterizing exposure and risk from asbestos. In brief, the approach recommended in the framework is as follows:

- Asbestos fibers in outdoor soil, indoor dust, or other source materials present the greatest concern when the asbestos is released from the source material into air where it can be inhaled. If inhaled, asbestos fibers can increase the risk of developing lung cancer, mesothelioma, pleural fibrosis, and asbestosis.
- The relationship between the concentration of asbestos in a source material and the concentration of fibers in air that results when the source is disturbed is very complex, depending on a wide range of variables. To date, no method has been found that reliably predicts the concentration of asbestos in air given the concentration of asbestos in the source.
- Because of this limitation, this Framework emphasizes an empirical approach, a combination of soil, dust and air samples. Concentrations of asbestos in air at the location of a source disturbance are measured rather than predicted.
- Measurements of fiber concentrations in air that are based on personal air monitors are generally preferred over stationary air monitors, since the personal monitors more accurately reflect the concentration of asbestos in the breathing zone of the exposed person. Activity based sampling (ABS) is a personal monitoring approach that can provide data for risk assessment and is emphasized in this framework. ABS is a standard method used by industrial hygienists to evaluate workplace exposures. ABS can be useful for assessment of both outdoor soil and indoor dust.
- To allow for improved risk assessments, the analytical procedure used to analyze samples from a site should capture information concerning the specific mineralogy and morphology of asbestos fibers that are present. Hence, the TRW is recommending that a modification of the International Organization for Standardization (ISO) Method 10312

generally should be used for measuring asbestos at Superfund and other hazardous waste sites.

- Depending on its application, potential limitations of the ABS approach may include the representativeness of samples over an area of concern and the ability to generalize findings from a point in time and space to future exposures, other locations, and differing environmental conditions. Site specific data quality objectives and sampling plans should consider such issues prior to sample collection. Furthermore, cost of ABS approaches and sample analysis, analytical sensitivity, and difficulties of the situation should be considered in the planning process.

The Framework does not seek to provide direction or guidance on risk management decisions which may be required during a site assessment. The key management decision, however, typically is how to interrupt or eliminate the complete inhalation exposure pathway. As always, EPA believes that risk management issues should be evaluated by the site manager, with input from the site scientific teams, stakeholders, Regional management, and legal staff, as appropriate. The document is currently being distributed for regional review with an expectation of a final document early in FY 08.

The toxicity studies being performed in the Libby Action Plan will provide additional toxicity data that can be used to determine whether additional clean-up is needed at sites receiving Libby ore. These studies will assess the toxicity of the form of asbestos found in Libby ore, and an epidemiological study of workers processing Libby ore will provide toxicity values for additional health effects (i.e., non-cancer).

GAO Recommendation 2:

We also recommend that the Administrator direct the Office of Solid Waste and Emergency Response to review regional offices' implementation of the National Contingency Plan public notification provisions and associated guidance to ensure that, in the future, (1) regional offices are appropriately determining the extent of community outreach needed and (2) newspaper notifications are placed prominently and are written in clear language that contains all critical information, such as the name of the contaminant, the location of the site, and the associated health risks.

EPA Response:

EPA agrees that it is important to communicate with the community and state and local government officials regarding cleanups in their areas. Sections of the National Contingency Plan (NCP) are specifically designed to allow rapid action by EPA responders when there is an urgent threat to human health and the environment.

A key principle guiding EPA public outreach efforts under the NCP is the discretion allowed in how much public outreach should be conducted during site cleanups. EPA believes that the GAO report does not adequately discuss the differences in the scope of cleanup at the various vermiculite sites and its impact on the type and extent of public outreach efforts.

See comment 1.

For example, the Great Falls site in Region 8 was a single residence where a former worker at an exfoliation plant had taken asbestos wastes and placed them in his driveway, exposing his family to asbestos as well as the families who later purchased the home. For this type of site, the privacy of the homeowner must be considered and it would be inappropriate to widely distribute fact sheets or conduct public meetings. Instead, the On-Scene Coordinator (OSC) met with State and local officials and with neighbors in the near vicinity of the one-yard cleanup.

Conversely, the Region 5 site in Minneapolis involved hundreds of residences where residents had taken home contaminated "free crushed rock" from the exfoliation plant. Region 5 provided extensive outreach in identifying those contaminated properties and communicating with hundreds of potentially affected homeowners. The Dearborn site which involved the sampling of hundreds of homes is another similar example.

It is EPA's experience that there are a variety of community concerns during cleanup. For example, communities may be sensitive to the perceived stigma of having a Superfund site. The neighborhoods surrounding sites may be residential, industrial or rural. Commercial businesses may be sensitive that customers could have a negative impression if the business is located within or near a Superfund site. Farmers and ranchers may be sensitive that their commercial food production may be rejected if the public erroneously believes that the food has been impacted by contamination. EPA takes all these factors, and many others, into account to exercise their discretion of the appropriate level of public outreach.

There are a number of national activities sponsored by EPA Headquarters which provide an opportunity to strengthen community outreach and public notification efforts and review and improve upon current practices. EPA believes that existing mechanisms can be used effectively to address public notification and community outreach concerns raised in the GAO report.

Notably, EPA holds an annual national conference, "On-Scene-Coordinator Readiness Training" which offers nationally approved training along several technical and policy tracks including community outreach. Over the past several years, OSC Readiness has offered courses on Risk and Crisis Communication and Temporary Relocation issues focusing on the impacted community. The upcoming February 2008 OSC Readiness Conference will include training courses on Advanced Media Relations, Conducting Effective Community Involvement at Removal and Emergency Response Sites, and Temporary Relocation.

Another significant national effort conducted annually is the Core Emergency Response and Removal Program Evaluation. This evaluation methodology was first used in 2001 and, since then, has been conducted annually with ongoing improvements. In its current version, a team of EPA reviewers conducts the evaluation of each region's Emergency Response and Removal Program across key elements including Public Information and Community Involvement. The review typically addresses such issues as following established protocols for interactions with the media and adherence to policies and guidance for site-specific community relations.

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Regions have scored high on this element, although continuous improvement is always an objective and, based on the GAO recommendations in this area, a specific focus on community outreach activities and newspaper notifications may be warranted.

II. EPA Detailed Comments on GAO's Report

See comment 2.

Page 4, lines 24-25 (see also page 27, 5th bullet, page 28 line 16 and page 29, lines 9-11)
Delete "and in Minneapolis, MN and Dearborn, MI, they did not hold a comment period."
The public comment period is discretionary for a time critical removal.

See comment 3.

Page 6, lines 7-9
Sentence should read: "Thus, even though the Libby mine closed around 1990, many residents, including former workers **as well as non-workers**, have been recently diagnosed"

See comment 4.

Page 6, the paragraph below Figure 1
We do not believe that "Between 1980 and 1982 EPA conducted several studies on the potential health risks from exposure to asbestos-contaminated vermiculite". Our understanding is that the MRI study/report was not a "health risk" study, but an unsuccessful attempt to understand the kind of environmental air releases that were occurring at the mine site. While other study or literature reviews were produced at EPA, the only "health" related studies that were being undertaken at this time were the Lockey/O.M.Scott study in Marysville, Ohio and the NIOSH DRDS study, which had been initiated in 1980 but had not yet obtained W.R. Grace's (WRG) cooperation by 1982.

See comment 5.

Page 7, at the end of the paragraph carrying over from page 6
Suggest that the report mention that EPA cited and fined WRG (in the early 1990s) for failure to submit relevant information under Toxic Substance Control Act (TSCA). The information that WRG had generated over a decade earlier (prior to the O.M. Scott incident) was an animal study which concluded that exposure to Libby tremolite produced fibrosis and malignancies in the test population in a far more aggressive manner than other forms of asbestos.

See comment 6.

Page 7, in the paragraph beginning with line 14
The draft report states that "...EPA began investigating, and, in 2000, began cleaning up contamination at the Libby mine."

EPA has not ever undertaken a cleanup of the Libby Mine, but of former WRG-owned properties in the Libby community that were sold (by WRG) to individuals and the city, and of locations in the community where tremolite contaminated vermiculite and vermiculite wastes were found. Recommend making a correction to the statement in the report.

See comment 7.

Page 8, after the paragraph carrying over from page 7 and footnote 8
GAO may want to additionally cite the criminal indictment's allegations that W.R. Grace engaged in a conspiracy to defraud the EPA and NIOSH during the late-1970s/early 1980s (see <http://www.mtb.uscourts.gov/mtb/images/590.pdf> for details). The GAO and IG reports

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cited only looked at EPA's activities during that time frame, they did not look at the conduct of W.R. Grace. (At this time, the indictment is only an allegation.)

See comment 8.

Page 8, lines 10-11

Suggest removing "and determining whether a cleanup action is needed." Determining whether or not a cleanup action is needed is done in the EE/CA (Engineering Evaluation/Cost Analysis) for non-time critical actions or in the Action Memorandum for an Emergency Response or Time-Critical Removal.

See comment 9.

Page 10, lines 24-25

Suggest revising the sentence to read, "These 194 sites together are believed to have received at least 6 million tons of ore from the Libby, Montana mine and ore processing operations".

See comment 10.

Page 15, lines 10-13

The report states that the clean up standard of 1% asbestos is based on weight. The 1% threshold is based on percent area (of a microscopic field).

See comment 11.

Page 15-16 and as a general comment regarding 1% threshold value

There is a need to clarify that a 1% cut-off (i.e., not cleaning up asbestos at levels below this threshold) level for asbestos soil contamination is not sufficient for EPA Superfund sites. A 1% level can and has been used for identification of areas at a site that can be rapidly remedied but is not adequate as a cut-off for areas that are contaminated below 1%. In fact, the GAO report's discussion of the use of 1% as cleanup threshold should mention that the scientific findings of EPA and ATSDR regarding the Libby, Montana Superfund site were specifically cited in a 2004 nationwide memorandum to all EPA Superfund National Superfund Managers which advised that, although 1% is used as a threshold level in a variety of regulatory programs, "Regions should not assume that materials containing less than 1 percent asbestos do not pose an unreasonable risk to human health." Please refer to previously submitted memorandum from Michael B. Cook, Director, Office of Superfund Remediation and Technology Innovation, August 10, 2004. As noted in response to GAO recommendations, EPA is currently drafting additional guidance on this subject.

EPA requests that GAO clarify the significance and intent of the 1% threshold value where it is referenced throughout the document, in order to prevent creating confusion that may mischaracterize EPA's position on asbestos site assessment and cleanup efforts.

See comment 12.

Page 16, footnote 13

"For a site in Brutus, New York, assessment activities are on-going and EPA has not yet determined if a cleanup action will occur" This statement should be changed to indicate that the assessment decision has been made and the Region is drafting a report to document its decision at this time.

Suggested edit: "For a site in Brutus, New York, after a review by a Regional risk assessor and the OSC working on the project, it has been decided that the Site is not eligible for a federal CERCLA removal action. The assessment report documenting the decision is being drafted for management review and approval."

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Note: This decision was reported in the comment's column of the Region 2 Site Summary Chart (Attachment 1 - Appendix B Region 2 List of Asbestos Sites 5-17-07.xls) on page 2, GAO ID Number 123 and in the Weedsport Fact Sheet (Attachment 3 - FS Weedsport.5-16-17.wpd). These attachments were submitted to the GAO through EPA HQ on May 21, 2007.

See comment 13.

Page 16, footnote 13 and Page 17, note under Figure 5

The footnotes make reference to Ellwood, Pennsylvania. The correct reference should read Ellwood City, Pennsylvania.

See comment 14.

Page 20, lines 27-28

Report states: "Since the plants no longer process Libby ore, current residents living around the sites are not now being exposed through processing."

This statement fails to recognize that current residents may still be exposed through residues at the site. The Hamilton, NJ facility had not been in production for over ten years, but there was still tremendous amount of residues from the expansion plant on the inside of the building that was owned and operated by a document destruction company.

We believe that the experience Region 2 had at the Hamilton, NJ expansion plant should factor in this analysis. A closed investigation (statute of limitations issues) disclosed that information received from WRG was misleading and inaccurate. The same offices at WRG that ATSDR and EPA were using to gather information from are tied to charges of obstruction. This was borne out in Hamilton where enormous quantities of vermiculite wastes were found buried behind the facility and underneath concrete pads laid just prior to the closure of the expansion plant in 1994-96. As it has been previously discussed, the inclusion of the criminal case in the equation of these facilities alters their evaluations significantly.

See comment 15.

Page 21, footnote 18

As a point of additional information and clarification, Region 2 used a combination of a PLM Standard Method (CARB 435) which has a detection limit 0.25% followed by TEM analysis on a selected number (10%) of the PLM samples, as a check and to further assess its soil samples at the Hamilton Township and the Weedsport sites. This was one of the approaches recommended by the Office of Emergency and Remedial Response.

"The PLM method can detect fibers with lengths greater than ~ 1 µm, widths greater than ~ 0.25 µm, and aspect ratio (length to width ratios) greater than 3. Detection limits for PLM methods are typically 0.25% - 1%." ¹

Footnote: ¹ Health Consultation Zonolite/W. R. Grace Site 35 Industrial Road Hamilton Township, Mercer County, New Jersey. (Prepared by the New Jersey Department of Health and Senior Services for ATSDR.)

See comment 16.

Page 22, lines 7-8

Last sentence of the first paragraph is incomplete (i.e., text appears to be missing from the last sentence).

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See comment 17.

Page 22, footnote

Where does this text belong? "This is the analytical technique that many regulations are based on (e.g. occupational exposure). PCM has limited use because it cannot differentiate between asbestos and non-asbestos fibers. For this reason, it was sometimes used in combination with TEM."

Is it part of Footnote 18 on page 21?

See comment 18.

Page 25, lines 7-12

"Detailed work plans for these studies are currently being developed and will involve consultation with other agencies and will undergo external peer reviews. Two of the studies are scheduled to be completed by the end of fiscal year 2007 and the other 10 studies by the end of fiscal year 2009. The milestone date for completing the baseline risk assessment, including the comprehensive toxicity assessment, is the end of fiscal year 2010."

Should be replaced with the following:

"Detailed work plans for five new toxicology studies have been completed with consultation from other agencies and external peer reviews. Two studies are continuations of on-going efforts. Detailed work plans for remaining studies are currently being finalized. All studies are scheduled to be completed by the end of calendar year 2009 although some test animals may be evaluated beyond this date depended on the latency of responses. The milestone date for completing the baseline risk assessment, including the comprehensive toxicity assessment, is the end of fiscal year 2010."

See comment 19.

Page 27, 5th bullet

... EPA must, as appropriate, provide the public no less than 30 days to provide comments about the cleanup and prepare a written response to significant comments.

See comment 20.

Page 28, line 16

Delete, "and did not hold a public comment period." The public comment period is discretionary.

See comment 21.

Page 28, footnote 26 (also page 35, line 17)

The footnote should state that a previous owner had worked at a facility...

See comment 22.

Page 29, lines 9-11

Suggest revising to the following, "EPA Region 5 officials explained that the NCP does not require EPA to hold a comment period for removal actions. They noted that the NCP allows EPA latitude....."

See comment 23.

Page 29, lines 24-25

The revised report states the notice for the Wilder site was placed 21 days after the deadline. While the review findings correctly state that the region did not announce the notice of availability for the administrative record within 60 days of the response initiation, regional records indicate the region issued a press release regarding the notice on the 66th day. EPA mobilized onsite for the response September 8, 2003, and issued a press release

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See comment 24.

to announce the availability of the administrative record on November 13, 2003. A copy of the press release was provided with the May 21, 2007 review comments. Including the above information will more accurately present EPA community activity at this site.

Page 33, Table 2

Mass mailings were used at the Western Mineral site in Minneapolis, MN. Please update Table 2 to reflect the use of direct mail to inform residents.

For the Minot, ND site, the EPA OSC was available at the on-site trailer (see also comments for page 46). Please update Table 2 accordingly.

See comment 25.

Page 35, lines 7-16

Regarding the Honolulu site, a Hawaii State OSC was contacted by the U.S. EPA OSC. During the removal action, two Hawaii State OSCs visited the site and reviewed the removal action while the cleanup was being conducted. This removal action consisted of excavating one cubic yard of soil from a planter box; scraping approximately 4 square feet of vermiculite off a wall; and wet wiping, followed by spray encapsulation of three wood trusses. The removal action was concluded in a short time period, and the Hawaii State OSCs expressed satisfaction with the conduct of the removal. Information regarding the scope of the cleanup effort should be included in the final report along with the involvement of the Hawaii State OSCs.

See comment 26.

Page 35, lines 15-17

Great Falls: "An official from the Montana Department of Environmental Quality (DEQ) was very dissatisfied about EPA Region 8's lack of notification..." This is inaccurate. EPA Region 8 notified the Montana DEQ regarding the Great Falls cleanup. The personnel notified at the Montana DEQ were John Podolinsky and Craig French. EPA does not know who GAO contacted at the Montana DEQ, but it is inaccurate to report that EPA Region 8 did not notify this agency. Suggest that this information is removed from the draft report or that the report includes EPA's position on notification of the Montana DEQ.

See comment 27.

Page 36, footnote 29

Region 2 believes that its contacts and communications with the NJDEP during the early stages of the site investigation process were not "informal" communications. The communications did initially begin as verbal communications at the Joint EPA, NJDEP, and NYSDEC Program Meeting in March of 2000. At the request of the NJDEP, an e-mail was sent to them on April 13, 2000. It provided additional information on the proposed approach, the intent of the agency to conduct CERCLA investigations and, if warranted, CERCLA responses at the sites on the inventory of sites. The NJDEP was notified of the Region's plan of action and requested to provide any relevant information in their possession to assist the Region with its investigations. The program outlined in the e-mail was followed at the Hamilton Township, NJ site and the ultimate outcome of the EPA investigative effort was that a CERCLA action (Phase I) was completed and a Phase II CERCLA action is currently ongoing at the site. If desired, EPA can provide copies of the actual correspondence and information sent to the NJDEP on April 13, 2000.

During the time of the Hamilton site work, telephone conversations between Janet Smolenski, NJDEP removal/remedial project coordinator, and James Daloia Team Leader

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for the EPA Region II Emergency Response program took place on a regular basis. The purpose of these telephone conversations was to share information between the two program offices of the NJDEP and the EPA and to receive and provide timely updates of various removal site activities including the Hamilton Township site.

As far as this project is concerned, it was and is the belief of the Removal Program that EPA/NJDEP communications continue to be effective.

See comment 28.

Page 38, lines 13-19

In March 2003, EPA Community Involvement staff traveled to Wilder, Kentucky to meet with city officials for the purpose of informing them of the site as well as to establish a location within city hall to use as an office for community relations activities. EPA mobilized onsite for the response on September 8, 2003. This information should be included in the final report.

See comment 29.

Page 38, lines 20-21

Great Falls: The EPA OSC did notify city officials regarding the cleanup. Regarding the contractor licensing issued raised by a city official, EPA is not required to use contractors licensed with a particular city or to obtain permits. This information should be noted in GAO's report.

See comment 30.

Page 40, lines 13-15

"At two of the three sites, however, most discussion group participants said EPA did not notify them about the cleanups before they began. At Minot...." As previously provided in response to GAO's "Questions and Request for Documents" dated April 5, 2006, for the Minot site EPA distributed fact sheets, held a public meeting, and went door-to-door to discuss the upcoming removal action. Information pertaining to EPA's community outreach activities for this site should be included in this section.

See comment 31.

Page 46, lines 20-21

EPA conducted a number of effective community outreach activities for the Minot, ND site including: (1) EPA's hand-delivered fact sheet; (2) EPA's public meeting; (3) EPA's door-to-door visits; (4) the front page article in the Minot Daily News; or (5) the availability of the EPA On-Scene Coordinator at the on-site trailer. Documentation regarding these efforts was provided to GAO in the site file and response to their "Questions and Request for Documents" dated April 5, 2006. By limiting questioning of the focus group to the public notice for the administrative record, the draft report reaches an inaccurate conclusion regarding EPA's efforts for community outreach at the site. Page 46 of the draft report states that, "participants from all three groups agreed that fliers, letters, public meetings, and door-to-door contacts were effective." The Minot Site included three of these four recommendations. Because the focus group interview was conducted nearly four years after the cleanup and because relevant materials from this site do not appear to have been used in the interview, EPA disagrees with the findings of the Minot focus group and recommends that they not be included in the final report. The Minot Site should not be used as an example of poor community outreach either in the lead paragraphs of the report, or anywhere in the body of the report since this site did have good community outreach by EPA.

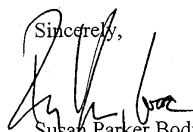
See comment 32.

Page 47, lines 6-7

"...nor can it be assured that even these 19 sites now pose minimal risk to public health and the environment."

This conclusion as written is too broadly. At many sites, such as Minot, Salt Lake City, and Great Falls, cleanups were performed to remove all amphibole asbestos on the ground surface. Confirmation samples on the excavated ground surfaces showed no detections of amphibole asbestos following cleanup. EPA would agree with a statement that sites still having detectable levels of asbestos may pose a risk. If this is the intent of the GAO conclusion, the report should state this more specifically and not include broad statements about sites which were cleaned up to no detectable levels of asbestos.

Thank you again for the opportunity to review GAO's draft report. Your consideration of our comments will be appreciated.

Sincerely,

Susan Parker Bodine
Assistant Administrator

The following are GAO's comments on the Environmental Protection Agency's letter dated September 21, 2007.

GAO Comments

1. GAO does note in the report that the Great Falls site in Region 8 involved a single residence where a former worker at a facility that processed Libby ore had taken contaminated waste product from the plant to his residence to resurface his driveway. While GAO acknowledges that the privacy of the homeowner should be considered, providing the public with information about such contamination could alert others who also used the waste ore for similar purposes on their properties. Our review of information on EPA's evaluations of sites that received Libby ore revealed that one of the primary concerns was whether former employees or the general public took asbestos-contaminated waste ore from the sites to use in their gardens or to landscape their properties. Indeed a review of EPA documentation related to the plant in Great Falls where the homeowner worked indicates that another former employee interviewed by EPA stated that some people requested and were allowed to take dust left over from the processing of the ore to use in their gardens.

While GAO acknowledges that it is important to consider community concerns in deciding the extent of public notification needed during site cleanup, for the sites that received Libby ore, widely disseminating information about these sites to the general public could help identify former workers and others that could have been exposed in the past to the asbestos in the ore. These people, in turn, could provide valuable information that could help EPA in identifying contaminated areas that need to be cleaned up, such as where waste rock was dumped.

2. We did not make the suggested change. The statement is factually accurate and we already note the discretionary nature of the relevant NCP provisions in the report. Region 5's reasoning for not holding public comment periods for these sites is also reflected in the report.
3. We changed the text to read, "Thus, even though the Libby mine closed around 1990, many residents, former workers, and others who were exposed to the asbestos-contaminated ore recently have been diagnosed with asbestos-related diseases and many more may become ill in the future."
4. We changed text to read, "Between 1980 and 1982, EPA issued a series of reports related to asbestos-contaminated vermiculite. Most of these

reports indicated that there was a lack of data on both exposure to asbestos-contaminated vermiculite and its adverse health effects. Further, the reports identified problems in sampling, analysis, and reproducibility of data regarding low levels of asbestos in vermiculite, which made it difficult to acquire data on exposure and health effects.”

5. We added a footnote stating that EPA cited and fined W.R. Grace in the early 1990s for failure to submit relevant information under the Toxic Substances Control Act.
6. We changed the text throughout the report as appropriate to clarify that EPA is cleaning up properties in the Libby area.
7. We revised the report to include the following statements: “As part of an ongoing criminal case against W.R. Grace, the government has alleged that Grace engaged in a conspiracy to defraud EPA and the National Institute for Occupational Safety and Health by concealing and misrepresenting the nature of the asbestos-containing vermiculite produced at the mine. Grace has denied the allegations.”
8. Under the NCP, a removal site evaluation includes a removal preliminary assessment and, if warranted, a removal site inspection. 40 C.F.R. § 300.410(a). A preliminary assessment includes, among other things, an “evaluation of factors necessary to make the determination of whether a removal is necessary.” 40 C.F.R. § 300.410(c)(1)(iv). We now use this language in the report.
9. We changed the language to read, “These 195 sites are believed to have received a combined total of at least 6 million tons of ore from the Libby, Montana mine and ore processing operations.”
10. We changed the text throughout the report as appropriate to clarify that the 1 percent asbestos standard is based on the percentage of the area of a microscopic field.
11. We did not make any changes as a result of this comment because the report already includes a discussion of this memorandum.
12. EPA had previously indicated to us that that the Removal Evaluation Report was pending for this site. We interpreted this as meaning that the final decision had not been made. The report has been updated to indicate that a final assessment decision has been made for the site in Brutus, New York, and the Region is drafting the report to document this decision.

13. We made the change suggested by EPA.
14. We clarified the language to read, “Since the plants no longer process Libby ore, current residents living around the sites are no longer being exposed through air emissions from processing activities at the plants.”
15. We did not make any changes based on this comment because it was for additional information and clarification and was not intended to suggest a specific change to the report.
16. The sentence is now complete. It reads “After conducting additional sampling at one of these sites, EPA determined the site required further cleanup.”
17. We did not make any changes based on this comment because the text is part of a footnote.
18. We changed the text to read, “Detailed work plans for five of these studies have been completed with consultation from other agencies and external peer reviewers. Two other studies are continuations of ongoing efforts. Detailed work plans for the remaining five studies are currently being finalized. All studies are scheduled to be completed by the end of calendar year 2009. The milestone date for completing the baseline risk assessment, including the comprehensive toxicity assessment, is the end of fiscal year 2010.”
19. No change was made; the text in the bullet already contains the phrase “as appropriate”.
20. We did not make the suggested change. The statement is factually accurate and we already note the discretionary nature of the relevant NCP provisions in the report.
21. We made the change suggested by EPA.
22. We did not make the suggested change. We already noted the discretionary nature of the relevant NCP provisions in the report.
23. We revised the text to read, “and at the Wilder site, the notice was placed 6 days after the deadline.”
24. We made the changes suggested by EPA.

25. We did not make the suggested change. In our correspondence with EPA about the Honolulu site, EPA indicated that the Hawaii Department of Health was involved in the cleanup. We contacted the Hawaii Department of Health and were directed to officials identified as being knowledgeable about the cleanup. The views expressed in the report are those of the officials we were directed to. During our interview with these officials, they stated the state OSC did do a drive by of the site before the cleanup began, but said the state was not involved around the time of the removal.
26. We did not make the suggested change. In the case of the Great Falls site, we called the Montana Department of Environmental Quality and asked to speak to the state staff EPA said were involved with this site. We were directed to another person identified as being knowledgeable about the cleanup. The views expressed in the report are those of the official we were directed to. In response to EPA's comment, we tried to contact the two staff named by EPA again. One person was no longer working for the Montana Department of Environmental Quality and the other person said the official that we spoke to originally was the main contact for that site and that he had nothing to add to the information we already had about the site.
27. We sent a copy of EPA's comments to the New Jersey Department of Environmental Protection (NJDEP) for their review. These officials responded that they agree with GAO's summary of NJDEP's comments as presented in the report. They further stated that concerning the Phase I removal action at the Hamilton Township site, NJDEP continues to maintain that EPA's notice to NJDEP of the Phase I removal action at the site could have been better. The officials said the March 24, 2000, meeting referred to in EPA's comments was a regularly scheduled, biannual meeting between NJDEP's Emergency Response Bureau and EPA's response unit to discuss general removal activities and to coordinate the activities of the Region 2 states (New York and New Jersey) with those of the EPA. NJDEP officials said the attendees at this meeting remember a short discussion about the probability that the vermiculite ore from Libby, Montana, contained asbestos and that this ore was shipped throughout the United States, but none of the attendees construed this as official notification to NJDEP of asbestos contamination at the Hamilton Township site. NJDEP added that the "inventory of sites" and the "Agency Statement on Vermiculite Facility List" sent by EPA to NJDEP following the March 2000 meeting specifically stated that the "list [of vermiculite sites] is evolving and is subject to change as more information becomes available; therefore, EPA cannot verify the accuracy of this list." NJDEP did not view these

documents as any kind of official notification of a clean up action to be undertaken at the Hamilton Township site.

NJDEP reiterated that it first learned of the proposed removal action at the Hamilton Township site not in 2000, but rather only when it was copied on a November 6, 2002 Action Memorandum. It subsequently was copied on two Pollution Reports, dated January 30, 2004, and February 27, 2004, but did not learn that the removal action was completed until March 2005, when NJDEP attended a stakeholder meeting.

During the time of the Phase I removal action, NJDEP said that it does not dispute that EPA communicated with Janet Smolenski of NJDEP by copying her on the two Pollution Reports referenced above and by general telephone conversation(s) with Jim Daloia of EPA. The officials said there are no other records in NJDEP's files to indicate that EPA sent any additional Pollution Reports to NJDEP, nor are there records of the specific telephone conversations held.

28. We did not make the change suggested by EPA. In the case of the Wilder site, we called the city of Wilder and asked to speak to the staff with the most knowledge about the cleanup. This person was also listed as a city contact in EPA's community-relations plan for the Wilder site. The views expressed in the report are those of that official.
29. We did not make the first change suggested by EPA. In the case of the Great Falls site, we called the city of Great Falls and were directed to a person identified as being knowledgeable about the cleanup. The views expressed in the report are those of the official to whom we were directed. Regarding the contractor licensing issue raised by a city official, we noted the information that EPA provided in a footnote.
30. Table 2 of the draft report already indicates that, for the Minot site, EPA distributed fact sheets, held a public meeting, and went door-to-door to discuss the removal action. The views presented in the report are those of residents who lived within a half-mile of the Minot site. In fact, as pointed out in the report, one focus group participant's backyard bordered the cleanup site. GAO cannot explain why EPA's public-notification efforts apparently failed to reach the participants in the focus group.
31. Focus-group participants were asked if they had heard that EPA was cleaning up the sites before the cleanup started, including receiving any fliers from EPA, hearing about any public meetings sponsored by EPA, or seeing any EPA officials walking around their neighborhoods.

For the Minot site, the views presented in this report are those of residents who lived within a half-mile of the site. In fact, as pointed out in the report, one focus group participant's backyard bordered the cleanup site. GAO cannot explain why EPA's public notification efforts apparently failed to reach the participants in the focus group.

32. We clarified the language to avoid any inference that sites that were cleaned up to non-detectable levels still pose a risk.

Appendix III: GAO Contact and Staff Acknowledgments

GAO Contact

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Staff Acknowledgments

In addition to the individual named above, Steve Elstein, Erin Lansburgh, David Stickers, and Lisa Turner made key contributions to this report. Also contributing to the report were Richard Johnson, Jeremy Manion, Stuart Ryba, Stephanie Sand, Carol Shulman, and Monica Wolford.

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