EVALUATION OF MSHA'S HANDLING OF INSPECTIONS AT THE W.R. GRACE & COMPANY MINE IN LIBBY, MONTANA

MINE SAFETY AND HEALTH ADMINISTRATION

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TABLE OF CONTENTS

ACRONYMS

ANPR	-	Advanced Notice of Proposed Rulemaking
DOL	-	Department of Labor
EPA	-	Environmental Protection Agency
MSHA	-	Mine Safety and Health Administration
OIG	-	Office of Inspector General
OSHA	-	Occupational Safety and Health Administration
PCM	-	Phase Contrast Microscopy
PEL	-	Permissible Exposure Limit
TEM	-	Transmission Electron Microscopy

EXECUTIVE SUMMARY

The Mine Safety and Health Administration (MSHA), in partnership with the American mining community, works to eliminate fatalities, reduce the frequency and severity of accidents, and minimize health hazards associated with the mining industry in accordance with the Federal Mine Safety and Health Act of 1977 (the Mine Act).

In November 1999, the *Seattle Post-Intelligencer* published a series of newspaper articles on asbestos-related illnesses and fatalities among people living in Libby, Montana. The articles concerned a surface vermiculite mine owned by W. R. Grace & Company (Grace). The miners employed at the Grace mine were exposed to asbestos through the processing of the ore, and carried the dust home on their clothing and in their personal vehicles, thereby allegedly exposing family members. The Grace mine was an open-pit mine, and according to MSHA law had to be inspected at least twice a year.

In response to a Congressional inquiry in June 2000, the Environmental Protection Agency's (EPA's) Office of the Inspector General (OIG) opened an evaluation to examine that agency's knowledge of the situation in Libby. The EPA-OIG decided to coordinate with other Federal agencies with jurisdiction over Grace's mining operations in Libby, including the Department of Labor (DOL). It was through those coordination efforts that the DOL's Office of Inspector General decided to conduct an evaluation to determine Labor's role, if any, in the Libby situation. Since MSHA had jurisdiction over the Grace mine in Libby, the evaluation was designed to examine MSHA's inspection history of the mine and identify recommendations to reduce the risk of similar incidents.

RESULTS OF EVALUATION

Although the information we reviewed does not definitively support a conclusion that MSHA conducted two mine inspections every year, there is sufficient evidence to conclude that MSHA inspected the mine and conducted sampling on a regular basis. We do not believe that more inspections or sampling would have prevented the current situation in Libby. However, we identified five areas where MSHA can take a more proactive approach in addressing health-related risks to miners who are exposed to asbestos. Those areas are identified in the recommendations section below.

FINDING A - MSHA Conducted Regular Inspections and Personal Exposure Sampling at the W.R. Grace Mine in Libby, Montana

MSHA inspected the Libby mine from 1978 when MSHA was established until 1992, when the mine closed. Because our review began eight years after the Libby mine closed, we were unable to obtain a complete record of mine inspections. Although the information we reviewed does not definitively support a conclusion that MSHA conducted two mine inspections every year, there is sufficient evidence to conclude that MSHA inspected the mine and conducted sampling on a

regular basis. We do not believe that more inspections or sampling would have prevented the current situation in Libby.

FINDING B - <u>MSHA Needs To Lower the Permissible Exposure Limit for Asbestos</u>

With few exceptions, laboratory analysis of the asbestos samples taken by MSHA Inspectors from 1978 through 1990 showed the samples to be under MSHA's regulated Permissible Exposure Limit (PEL). Yet a large number of former Grace employees and family members in Libby have contracted asbestos-related illnesses. We believe this, coupled with current scientific evidence, indicates a need for MSHA to lower its asbestos PEL.

FINDING C - <u>MSHA Needs to Use a More Effective Method to Analyze Fiber Samples</u>

MSHA uses the Phase Contrast Microscopy (PCM) method for analyzing its asbestos sample results, as opposed to Transmission Electron Microscopy (TEM), which allows for greater magnification of the smallest fibers. We believe MSHA should use TEM in its initial analysis to determine if an asbestos sample is over the PEL.

FINDING D - <u>MSHA Needs to Address Take-Home Contamination from Asbestos</u>

Currently MSHA has no regulatory authority to address take-home contamination from asbestos. The agency attempted to address this issue in its 1989 proposed Air Quality rules, which were not finalized. To prevent asbestos-related illnesses of miners and their families contracted through exposure at a mine, MSHA needs to address both the asbestos exposure at the mine, and the take-home contamination. Implementation of the special safety requirements for asbestos and vermiculite mining and milling contained in the 1989 proposed rule should effectively address this issue. MSHA should implement these rules with regard to asbestos and vermiculite mining and milling.

FINDING E - <u>Miners have the Perception that Operators have Prior Notification of Inspections</u>

Section 103(a) of the Mine Act prohibits giving advance notice of mine inspections. During our interviews with former miners of the Grace Company in Libby, many stated it was their perception that Grace management had some form of advance notice of MSHA's inspections.
While we agree that perceptions are not always reality based, we believe that MSHA should continue to remind their enforcement personnel of the importance of taking every precaution to eliminate the possibility of advance notice of inspections.

FINDING F - <u>MSHA Inspectors Need Additional Training Regarding Asbestos Issues</u>

We found that most MSHA Inspectors had little or no education on the subject of exposure to asbestos, yet examination of scientific data shows that sufficient evidence was available to the public health community as early as the 1960's on the subject of asbestos related health risks.

We believe that MSHA should have been more cognizant of the emerging literature on asbestos, and incorporated such information in training programs for those Inspectors who visited mines with asbestos.

RECOMMENDATIONS

We recommend that MSHA take the following actions to reduce the likelihood of health-related risks associated with miners' exposure to asbestos.

1. Lower the permissible exposure limit for asbestos to a more protective level.

2. Use Transmission Electron Microscopy in its initial analysis of fiber samples that may contain asbestos.

3. Address take-home contamination from asbestos by implementing special safety requirements for asbestos and vermiculite mining and milling similar to those that were contained in the 1989 proposed rule.

4. Issue an annual policy directive reminding enforcement personnel of the prohibition of giving advance notice of inspections.

5. Take the following minimum actions regarding training for Inspectors:
   (a) provide specific training on asbestos-related matters to those Inspectors who visit mines known to contain asbestos;
   (b) implement the training recommendations of the MSHA task force that examined the agency's procedures for air and bulk sampling when asbestos may be present; and
   (c) post information on the MSHA agency web site that specifically addresses asbestos hazards in the mining industry.

MSHA RESPONSE AND OIG CONCLUSIONS

In their response MSHA stated that Recommendations 1, 2, and 3 will require rulemaking. Upon confirmation of a new Assistant Secretary for Mine Safety and Health, MSHA will present options for improving the asbestos standard. We consider these recommendations unresolved and have requested a status report no later than June 29, 2001.

The agency agreed with Recommendations 4 and 5. We consider these recommendations resolved and will close them once we receive the documentation detailed in the "MSHA Response and OIG Conclusion" section of the report.

The agency's complete response is found in the Appendix.

BACKGROUND

The Mine Safety and Health Administration (MSHA), in partnership with the American mining community, works to eliminate fatalities, reduce the frequency and severity of accidents, and minimize health hazards associated with the mining industry in accordance with the Federal Mine Safety and Health Act of 1977 (the Mine Act).

The Mine Act requires MSHA to inspect every underground mine four times annually and all surface mines two times annually to determine compliance with federal safety and health regulations.

In November 1999, the *Seattle Post-Intelligencer* published a series of newspaper articles on asbestos-related illnesses and fatalities among miners, their families and other citizens in one mining community located in Libby, Montana. This case concerned a surface vermiculite mine, owned by W. R. Grace & Company (Grace), which operated for over 50 years, ceasing operations in 1990, and closing in 1992. The *Post-Intelligencer* reporter claimed that at least 192 people had died as a result of asbestos contamination from the vermiculite ore, and at least another 375 have been diagnosed with asbestos illnesses.[1] It was reported that the mine released asbestos-containing dust into the community, and miners carried the dust home on their clothing and in their personal vehicles.

Asbestos

Asbestos is a generic term used to describe six fibrous mineral silicates, one of which is tremolite asbestos. Asbestos occurs naturally, and is found in seams or veins in some igneous or metamorphic rocks. Dust samples collected by MSHA have found asbestos fibers primarily at talc mines, vermiculite mines, taconite mines, and asbestos mines. MSHA believes that most miners in the United States are not at risk of exposure to asbestos. However, asbestos-containing rock does exist at a limited number of U. S. mining operations. Such was the case at the Grace mine in Libby, Montana.

Asbestos is dangerous when its microscopic fibers become airborne and are inhaled or swallowed. The way to prevent asbestos-related diseases is to avoid breathing these fibers.

There are two ways that miners could be exposed to asbestos: through the rock or ore being processed at the mine, or through commercial products at the mine that contain asbestos. The miners at the Grace mine were exposed through the processing of the ore.

[1]Andrew Schneider, "A Town Left to Die," Seattle *Post-Intelligencer*, Nov. 18, 1999.

W.R. Grace & Company

Grace began mining in Libby, Montana in 1963 when it purchased the Zonolite Company, including the vermiculite mine operation in Libby. Commercial mining operations began in Libby in 1923, ten years after vermiculite was discovered in the mountains outside the town. The site was an open-pit mine, and according to Federal law had to be inspected at least twice a year. Up to 200 people were employed at the mine during the period it was owned by Grace. At its peak, vermiculite production reached more than 200,000 tons a year.

EPA and DOL Coordinated Evaluations

In response to a Congressional inquiry in June 2000, the Environmental Protection Agency's (EPA's) Office of the Inspector General (OIG) opened an evaluation to examine that agency's knowledge of the situation in Libby. Beyond the immediate concern of whether they were still exposed to asbestos, the people of Libby also wanted to know why they were not warned of, or protected from, the hazards of asbestos.

The EPA-OIG decided to coordinate with other Federal agencies with jurisdiction over Grace's mining operations in Libby, including the Department of Labor (DOL). It was through those coordination efforts that the DOL's Office of Inspector General decided to conduct an evaluation to determine Labor's role, if any, in the Libby situation.

This evaluation supports the Department of Labor Strategic Goal 3, Quality Workplaces–*foster quality workplaces that are safe, healthy, and fair,* and the Outcome Goal–*reduce workplace injuries, illnesses, and fatalities.*

PURPOSE AND METHODOLOGY

PURPOSE

The purpose of this review was to examine MSHA's inspections of the vermiculite mine operated by Grace in Libby, Montana. Specifically we examined whether and when MSHA was aware of the asbestos-related health hazards at the Libby mine, what actions MSHA took in response to this information, and explored recommendations to reduce the risk of similar incidents.

METHODOLOGY

Our methodology included qualitative methods and an extensive document review.

Qualitative Methods

Qualitative methods included observing a mine inspection and conducting numerous interviews.

(1) As preparation for this report, we attended two days of an above ground mine inspection. The first day was dedicated to a review of safety requirements, while the second day was devoted to a collection of fiber samples.
(2) Throughout the evaluation we interviewed numerous MSHA officials and staff, including the Assistant Secretary for Mine Safety and Health, the Administrator of the Office of Metal and Nonmetal Safety and Health and three current MSHA Inspectors who participated in Libby mine inspections. We also interviewed 17 former Grace employees in Libby, Montana.

Document Review

We reviewed the following documents:

(1) MSHA materials: all available information related to the Grace mine in Libby, and all available information on the issue of asbestos. Information provided by MSHA included: inspection reports, sampling results, National Institute of Occupational Safety and Health studies, pertinent training manuals, policy directives, legislation, regulations and proposed rules.
(2) EPA materials: EPA reports and studies on asbestos and vermiculite mining and EPA memos and reports regarding Grace and Libby such as a Grace submission under 8(e) of the Toxic Substance Control Act.
(3) Montana Department of Environmental Quality materials including timelines and general background on the mine.
(4) *Seattle Post-Intelligencer* articles pertaining to Libby (November 19, 1991 - September 15, 2000).

(5) *Mortality from Asbestos in Libby, Montana*, U.S. Department of Health and Human Services, Public Health Service, Agency for Toxic Substances and Disease Registry (December 12, 2000).

We conducted our review in accordance with the *Quality Standards for Inspections* published by the President's Council on Integrity and Efficiency.

FINDINGS AND RECOMMENDATIONS

FINDING A - MSHA Conducted Regular Inspections and Personal Exposure Sampling at the W.R. Grace Mine in Libby, Montana

Because our review began eight years after the Libby mine closed, we were unable to obtain a complete record of mine inspections. However, MSHA was able to provide us with sufficient evidence to conclude that MSHA inspected the mine and conducted sampling on a regular basis. We do not believe that more inspections or sampling would have prevented the current situation in Libby.

Mine Act Requirements

The Mine Act requires that MSHA conduct regular inspections of above ground mines twice a year. A regular inspection is an inspection of a mine in its entirety to determine if an imminent danger exists, and if there is compliance with standards, citations, orders or decisions issued, or other requirements of the Act.

A regular inspection of an above ground mine, such as the Grace vermiculite mine in Libby, consists of three main phases:

- Work done by the Inspector prior to actually going to the mine, such as review of prior inspection reports.
- Work done by the Inspector at the mine, including: (1) pre-inspection conference; (2) check of all required records; (3) complete "walk-around" of the site; (4) health surveys–full shift samples for dust, noise, fumes, etc.; (5) issuance of citations, order, and compiling notes of inspection activities; (6) post-inspection conference.
- Work done by the Inspector after the mine visit, including: (1) report writing; (2) supplementary report with citations as lab results are obtained; and (3) possible compliance follow-up inspections.

MSHA has established specific procedures for conducting the health portion of mine inspections, with the ultimate goal of preventing occupational disease. Such disease is best prevented by limiting worker exposure to physical and chemical hazards to levels within the Permissible Exposure Limits (PELs).

MSHA's health standards include limits on the amount of airborne contaminants, such as asbestos, that a miner can inhale during work. These limits are referred to as PELs, and are set by regulation. To determine whether a mine is within the PEL for asbestos, an Inspector conducts personal exposure sampling. The collection of valid exposure measurements is necessary for quantifying health hazards and determining the need for environmental controls. MSHA instructs its Inspectors that there is not one best sampling strategy or plan for all work and exposure

situations, and the choice of a strategy should be based on the existing conditions.
The most important requirement of all sampling strategies is that the collected samples must be representative of a worker's normal, typical work activity and exposure. Conditions within the work environment on the day or week of sampling must be similar to those likely to be experienced by the worker when sampling is not being done. Inspectors are instructed not to collect personal samples during nonrepresentative conditions.

To sample for asbestos, an Inspector attaches the sampling device to a miner, or several miners. The Inspector makes the determination regarding who will wear the sampling device, based on observation of the work environment. While Inspectors should sample a sufficient number of workers to characterize the exposure levels of all occupations and/or areas, a well-documented overexposure of one worker, in a designated work area during a routine work shift, is sufficient to indicate the need for contaminant controls. The sampling device consists of an air pump and a filter. The samples are taken within the worker's breathing zone (2-foot diameter sphere surrounding the worker's head). At the end of the shift, the device is removed and the filters are sent to a laboratory for examination and results are documented.

Inspectors are not required to sample during every inspection. MSHA issues sampling guidelines to help inspectors determine when they need to sample. An Inspector will issue a health violation when the sample is over the asbestos PEL, plus an error factor of 25%. In other words, since the asbestos PEL is 2.0 fibers per cubic centimeter, MSHA should issue a health violation when the sample results exceed 2.5 fibers.

Analysis of Inspection History

MSHA's record retention schedule requires that inspection records of mines be kept for ten years. Because the Grace mine in Libby closed in 1992, and our review began in 2000, we were unable to obtain a complete record of mine inspections. Nevertheless, we were able to obtain sufficient documentation from MSHA to examine the inspection history of the Grace mine in Libby for the period 1978, the year MSHA was established, through 1992.

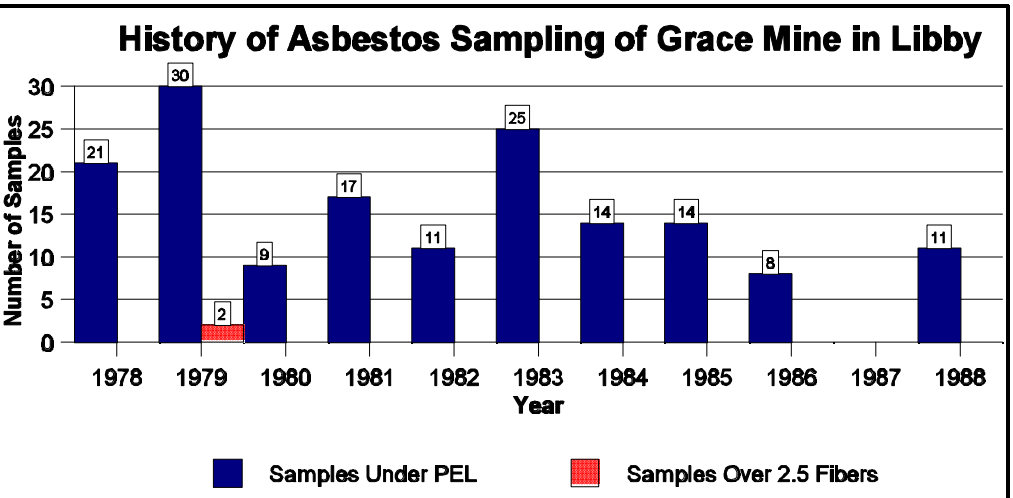
MSHA provided a printout of mine violations issued at the Grace mine from December 16, 1983 until the mines closing in 1992. This printout shows that MSHA conducted two regular inspections each calendar year from 1984 to 1992.

Analysis of Sampling History

MSHA also provided two lists of personal exposure sampling results from the Grace mine in Libby. One list contained information for the period covering March 1978 through December 1986; the second list contained results from December 14, 1983 through March 29, 1988. The reports document that MSHA sampled miners a total of 16 times between March 1978 and March 1988. A total of 162 workers wore sampling devices during the 16 inspections that included sampling.

In 1979, five of the of the 32 samples taken during an inspection were over the asbestos PEL, but only two exceeded 2.5 fibers. The two samples over 2.5 indicated an asbestos health hazard. We

are unable to determine whether MSHA issued a health violation because the record MSHA provided on the history of mine violations at Libby did not cover 1979. During the next inspection (1980), MSHA sampled seven workers and all seven samples were within the PEL. MSHA continued to sample at the mine for the next 10 years. During that 10 year period no samples exceeded the 2.5 threshold (see chart below).



MSHA sampled once in 1978, 1979, 1981, 1982 and 1984; twice in 1980 and 1986; 3 times during 1983 and 1985; and once up to March 29, 1988. Records show that MSHA did inspect the Libby mine twice in 1987; however they did not sample during those inspections.

To examine the sampling history for the period 1989 through 1992, we relied on MSHA's inspection reports–some of which were incomplete. There is evidence to show that MSHA continued to take asbestos samples during some, but not all, inspections through 1990. MSHA stopped sampling at the mine in 1990 because the operation was closing and the mine had not received a health violation in 10 years. MSHA continued to inspect the mine, without sampling, until the site closed in 1992.

Although the information we reviewed does not definitively support a conclusion that MSHA conducted two mine inspections every year from 1978 to 1983, there is sufficient evidence to conclude that MSHA inspected the mine and conducted sampling on a regular basis. We do not believe that more inspections or sampling would have prevented the current situation in Libby.

FINDING B - MSHA Needs To Lower the Permissible Exposure Limit for Asbestos

As noted in finding A, in accordance with the Mine Act, MSHA conducted regular inspections and sampling at the Grace mine in Libby, Montana for the period 1978 through 1990. With the few exceptions noted, the laboratory analysis of the asbestos samples showed the samples to be under MSHA's regulated PEL. Yet a large number of former Grace employees and their family members in Libby have contracted asbestos-related illnesses. We believe the number of illnesses, coupled with current scientific evidence, indicates a need for MSHA to lower its asbestos PEL.

In August 1989, MSHA published a proposed rule that would have revised its standards for air quality, chemical substances, and respiratory protection at both metal/nonmetal and coal mines. The proposal included updated PELs for roughly 620 airborne contaminants, and limits on 145 substances that would have been regulated for the first time. The proposal lowered the asbestos PEL from 2 fibers per cubic centimeter to .2 fibers per cubic centimeter.

MSHA officials stated that the proposed rule was never finalized because of a 1992 11th Circuit Court of Appeals ruling that invalidated the Occupational Safety and Health Administration's (OSHA's) PELs for 428 substances. OSHA used a "generic" rulemaking approach, grouping whole categories of substances with similar properties under a single rulemaking. The Court ruled that OSHA did not follow proper rulemaking procedures. To sustain the rulemaking, the PEL for each substance would have to be supported by substantial scientific evidence with adequate explanation, just as it would if OSHA promulgated 428 separate rules. Finally, the Court determined that OSHA failed to show for each PEL "significant risk of material health impairment" or "economic and technical feasibility" for the industries affected.

REGULATORY LIMITS ON ASBESTOS (MSHA/OSHA)

Year	MSHA's PEL	OSHA'S PEL
1976		2 fibers
1978	2 fibers	
1986		0.2 fibers
1994		0.1 fibers

Like OSHA, MSHA used "generic" rulemaking for its 1989 proposed rule. MSHA officials believed their proposal was similar to OSHA's and would also be invalidated by the Court. Therefore the rule was never finalized. In the interim, MSHA has not changed their PEL for asbestos. However, OSHA has lowered its asbestos PEL twice–once in 1986 to .2 fibers per cubic centimeter, and again in 1994 to .1 fibers per cubic centimeter. OSHA's lowering of their asbestos PEL indicates there is ample scientific evidence to support MSHA lowering it's asbestos PEL.

The reported recent events of asbestos related deaths and serious health problems in Libby have caused MSHA to reexamine its PEL. Based on this examination, on September 11, 2000, MSHA decided to issue an Advanced Notice of Proposed Rulemaking (ANPR) regarding the asbestos health standards. On December 6, 2001, MSHA informed us that they had not issued the ANPR because they are waiting for Office of Management and Budget and DOL clearances on other proposed rules.

In the interim, MSHA officials state their current policy is to inform miners when an asbestos sample is found to be over the OSHA PEL of .1 fibers. While MSHA has no authority to enforce the .1 fibers limit prior to a final regulation, they are taking a proactive approach to educating miners and operators of the health-related risks associated with exposure to asbestos over the .1 fibers limit, and encouraging them to take precautionary measures.

RECOMMENDATION #1

We recommend that MSHA lower the permissible exposure limit for asbestos to a more protective level.

FINDING C - MSHA Needs to Use a More Effective Method to Analyze Fiber Samples

In response to the *Seattle Post Intelligencer* series on the Grace vermiculite mine in Libby, MSHA formed a task force to examine their procedures for air and bulk sampling when asbestos may be present. MSHA was concerned about the large number of "non-detect" fiber results and the reported high number of health-related problems associated with exposure to asbestos. The task force developed a series of recommendations including increasing personal sample pump flow rates, changing the type of filter or cassette used in sampling, and developing practical instructions for fiber sampling. However, the task force did not address the method utilized to count and analyze the fiber samples.

MSHA's Health Inspection Procedures instruct the Inspector to be at the mine location where the sample is being collected prior to the end of the shift in order to collect the sample from the worker. The Inspector turns off the pump and immediately records the pump-off time. He then removes the sampling apparatus, replaces the inlet cap and plugs, and applies a sample seal to the cassette.

After the filter is sealed, it is sent to OSHA's laboratory for analysis. MSHA began utilizing OSHA's lab in 1986. Prior to this the analysis of fiber samples was conducted at MSHA's technical support group in their Denver office. Once the lab receives the filters, a wedge shaped portion of the filter is removed, placed on a glass microscope slide and made transparent. A measured area (field) is viewed by Phase Contrast Microscopy (PCM). All fibers meeting the defined criteria for asbestos are counted. If the lab determines that the sample is over the PEL, and MSHA plans to issue a citation, the lab will then examine another piece of the filter using Transmission Electron Microscopy (TEM).

The current regulation requires MSHA to use PCM at a 400–450 magnification to determine whether a sample exceeds the PEL. However, the smallest visible fiber using PCM is about 0.2 micrometers in diameter, while the finest asbestos fibers may be as small as 0.02 micrometers in diameter. For some exposures, substantially more fibers may be present than are actually counted.

Unlike PCM, TEM is capable of magnifications up to 1,000,000 times. However, common practice is to use a magnification of 20,000 times to examine asbestos fibers, because that level of magnification is all that is required to identify asbestos fibers. Because TEM microscopes are more powerful, they allow for better visibility and more precise counting of small fibers.

While PCM is less expensive and provides faster results than TEM , we feel there is benefit to MSHA's utilizing the more powerful TEM for analysis of asbestos fibers. Therefore, we believe MSHA should use TEM in its initial analysis to determine if an asbestos sample is over the PEL.

RECOMMENDATION #2

We recommend that MSHA use Transmission Electron Microscopy in its initial analysis of fiber samples that may contain asbestos.

FINDING D - MSHA Needs to Address Take-Home Contamination from Asbestos

During our interviews, former Grace employees stated that family members as well as miners have been diagnosed with asbestos-related illnesses. This indicates that miners were likely carrying asbestos fibers home on their clothing and on their person, thus exposing their family members and themselves.

Under their current regulations, MSHA has no authority to address take-home contamination from asbestos. MSHA attempted to address this issue in its 1989 proposed Air Quality rules. The proposed rule classified asbestos and mined and milled vermiculite ore that contained a greater than 0.1% concentration of asbestos as a Class 4 carcinogen. A 1982 analysis of raw vermiculite ore from Libby revealed asbestos contamination in the range of 21% to 26%.

Due to the long-term health risks, Class 4 carcinogens warrant special safety requirements. Miners would have had to wear full-body protective clothing and other personal protection equipment before entering an area where such ore is processed or handled. Upon exiting such areas, miners would also be required to remove their protective clothing and equipment and have them stored in adequate containers, which would either be disposed of or decontaminated by the employer. Finally, miners would have to thoroughly cleanse themselves and shower upon leaving at the end of the day. The National Institute of Occupational Safety and Health stated that these measures are effective in reducing or eliminating take-home contamination.

As discussed under Finding B, MSHA never finalized the 1989 proposed rule. To prevent asbestos-related illnesses of miners and their families contracted through exposure at a mine, MSHA needs to address both the asbestos exposure at the mine, and the take-home contamination. Implementation of the special safety requirements for asbestos and vermiculite mining and milling similar to those contained in the 1989 proposed rule should effectively address this issue. MSHA should implement these rules with regard to asbestos and vermiculite mining and milling.

RECOMMENDATION #3

We recommend that MSHA address take-home contamination from asbestos by implementing special safety requirements for asbestos and vermiculite mining and milling similar to those that were contained in the 1989 proposed rule.

FINDING E - Miners have the Perception that Operators have Prior Notification of Inspections

Section 103(a) of the Mine Act prohibits giving advance notice of inspections conducted by an authorized representative of the Secretary of Labor. MSHA Inspectors are instructed to perform their duties as defined in the Mine Act and the Metal and Nonmetal MSHA Inspection and Investigation Manual.

Any information relating to inspection and investigation schedules, including Inspectors' mine assignments, is to be restricted solely to MSHA personnel who have a need for the information.

During our interviews with 17 former miners of the Grace Company in Libby, 13 stated it was their perception that Grace management had some form of advance notice of MSHA's inspections. None of the interviewees complained about this perception. Instead they seemed to think it was just a routine matter for the mine operator to have prior notification.

Several interviewees stated there were several "signs" of an imminent inspection: the water truck would appear and begin watering down the dust; work assignments would be altered to allow for clean up, particularly with regard to potential safety violations; and MSHA Inspectors normally checked into one of the three local motels in Libby the night prior to the inspection, allowing for the information to be spread by the townspeople.

MSHA representatives from headquarters stated that the perception miners have regarding how inspections are conducted impacts on their overall enforcement effectiveness. They agreed that the perception of miners regarding advance notice of inspection is a concern to them, and agreed to take action to try to change negative perceptions regarding their inspection activities.

On September 20, 2000 the Administrator for Metal and Nonmetal Mine Safety and Health issued two memorandums:

- The first memorandum was addressed to Metal and Nonmetal managers and field supervisors with the subject "Supervisors' Responsibility." It cautioned supervisors that some Inspectors may be conducting regular inspections that are not in accordance with the requirements of the Mine Act. The memorandum specifically mentioned the requirement that MSHA provide no advance notice of inspections, and that inspections of the mine be conducted in their entirety. The Administrator expressly stated that the perception that some MSHA Inspectors are not conducting inspections as required by the Mine Act must be changed. The Supervisors were also instructed to review the second memorandum (described below) with each Inspector.

- The second memorandum was addressed to Metal and Nonmetal managers and enforcement personnel with the subject "Inspection Procedures." It identified seven concerns raised by miners throughout the country, including "company personnel have advance notice of MSHA inspections." MSHA personnel were instructed to provide no advance notice of MSHA inspections, and to be careful of conversations in public areas in order to avoid inadvertently providing advance notice of inspections.

While we agree that perceptions are not always reality based, we believe that MSHA should continue to remind their enforcement personnel of the importance of taking every possible precaution to eliminate the possibility of advance notice of inspections.

RECOMMENDATION #4

We recommend that MSHA issue an annual policy directive reminding enforcement personnel of the prohibition of giving advance notice of inspections.

FINDING F - MSHA Inspectors Need Additional Training Regarding Asbestos Issues

MSHA has a number of important tools for reducing injuries and illnesses in the nation's mines. Among these are various enforcement actions that MSHA can use to help ensure that dangerous conditions or practices are corrected. These actions are detailed in the Mine Act, which gives MSHA the tools to protect the safety and health of the more than 330,000 men and women who work in more than 14,000 mines across the country.

In addition to these enforcement actions, MSHA's training plays a fundamental role in their efforts to help protect miners from illness and injury on the job. Inspections alone cannot keep the mines accident-free or eliminate health hazards. Miners need adequate information in order to stay safe and healthy. They must be aware of how to perform their jobs properly, and they must learn to recognize and control the hazards in their work places.

Historically, MSHA has focused their strategic planning more on safety related issues as opposed to health related issues. The primary reason for such focus is MSHA's long-standing goal of reducing the number of miners killed or seriously injured in occupational accidents, while allowing for high levels of productivity in the mining industry. The achievements in safety in the mining industry are well documented. Although MSHA has developed a number of regulations in the health related area such as improvements to its abrasive blasting and drill dust control standard, noise regulation, and Part 46, MSHA's emphasis on miner's health has not kept pace with safety.

Training can provide key skills and knowledge in helping miners to recognize and control the hazards in their work places. But MSHA Inspectors can only provide adequate information to miners and operators on the subject of asbestos if they are well trained themselves on the issue.

Previously noted in finding A is our determination that Inspectors conducted their inspections at the Grace mine in Libby in accordance with MSHA regulations, and the sampling resulted in few findings over the allowed PEL. However, we also determined that Inspectors had little or no education on the subject of exposure to asbestos.

Interviews with MSHA Inspectors, headquarters' employees, and former Grace employees, revealed that Inspectors were not adequately trained on the health related risks associated with exposure to asbestos. We found that while MSHA had comprehensive training programs that addressed a variety of health issues such as silicosis prevention, diesel exhaust gases and particulate matter, pneumoconiosis (black lung) and other respirable dusts, no comparable training information on asbestos was provided to Inspectors.

We realize that Inspectors may encounter a wide variety of health issues during their inspections. Because of this, MSHA trains their Inspectors on how to determine appropriate sampling techniques, emphasizing ease of use in order to ensure accurate samples. This has resulted in Inspectors being well versed in sampling techniques for numerous health hazards, but leaves them lacking in extensive knowledge of the specific hazards they encounter.

Examination of scientific data shows that sufficient evidence was available to the public health community as early as the 1960's on the subject of asbestos related health risks. We believe that MSHA should have been more cognizant of the emerging literature on asbestos, and incorporated such information in training programs for those Inspectors who visited mines with asbestos. With this added knowledge, MSHA Inspectors could have then provided more information to the Grace miners on a pro-active basis–informing them of the possible long term risks of exposure to asbestos.

In March 2000, MSHA developed and distributed a Health Hazard Information Card (No. 21) entitled *Asbestos Hazards in the Mining Industry*. The card provides general information on risks associated with exposure to asbestos, as well as information on suggested preventative measures to lower the risks.

In August 2000, MSHA established a committee to examine the agency's current procedures for air and bulk sampling. The committee identified several deficiencies in their current system. In a report dated September 26, 2000 to the Assistant Secretary of Labor for Mine Safety and Health, several recommendations were noted as a result of the committee's examination. Recommendation number iv addressed MSHA's concern about the uncertainty of the accuracy of previous asbestos samples, and recommended a coordinated and intense sampling sweep at designated mines, to be conducted by a team of industrial hygienists and health specialists. This was followed by recommendation number v which suggested that MSHA should provide instructions and adequate training, including access to photos or actual samples of asbestos in rock form, to Inspectors. The recommendation clearly states that instructions to Inspectors should distinguish between sampling for naturally-occurring asbestos (i.e., in the ore being mined) and sampling at a demolition job where material containing asbestos (i.e., insulation on pipes) is or may be present. We agree these are excellent recommendations for MSHA to implement in order to begin training Inspectors more thoroughly on the subject of asbestos.

We realize that because the potential exists for numerous health hazards to be present in mines, Inspectors cannot be experts on every health hazard they might encounter. However, MSHA should provide better asbestos-related training to those Inspectors who visit mines where asbestos is known to be present. This will result in more effective enforcement of health standards that are fundamental to miners' health protection.

RECOMMENDATION #5

We recommend that MSHA take the following minimum actions:

(a) provide specific training on asbestos-related matters to those Inspectors who visit mines known to contain asbestos;

(b) implement the training recommendations of the MSHA task force that examined the agency's procedures for air and bulk sampling when asbestos may be present; and

(c) post information on the MSHA agency web site that specifically addresses asbestos hazards in the mining industry

MSHA Response and OIG Conclusions

MSHA's Response to Recommendations Numbered One, Two and Three:

- **Recommendation 1: Lower the permissible exposure limit for asbestos to a more protective level.**

- **Recommendation 2: Use Transmission Electron Microscopy to analyze fiber samples that may contain asbestos.**

- **Recommendation 3: Address take-home contamination from asbestos by implementing special safety requirements for asbestos and vermiculite mining and milling similar to those that were contained in the 1989 proposed rule.**

"Recommendations 1, 2, and 3 will require rulemaking. Upon confirmation of a new Assistant Secretary for Mine Safety and Health, MSHA will present options for improving the asbestos standard and proceed accordingly."

OIG's Conclusion to Recommendations Numbered One, Two and Three:

We consider these recommendations unresolved. We concur with MSHA's suggestion to present options for improving the asbestos standards to a newly appointed Assistant Secretary for Mine Safety and Health, provided the options concur with the recommendations noted above. A status report should be provided to this office no later than June 29, 2001, detailing the proposed actions to be taken on each recommendation.

MSHA's Response to Recommendation Number Four:

Recommendation 4: Issue an annual policy directive reminding enforcement personnel of the prohibition of giving advanced notice of inspections.

"The Federal Mine Safety and Health Act of 1977, Mine Act, prohibits providing advance notice of an inspection. Consistent with this recommendation MSHA will issue an annual directive reminding Metal and Nonmetal enforcement personnel of this important prohibition."

OIG's Conclusion to Recommendation Number Four:

We consider this recommendation to be resolved and will be closed pending our receipt of a copy of the annual policy directive reminding enforcement personnel of the prohibition of giving advance notice of inspections. Please provide a copy of the annual reminder for FY 2002 to this office by October 31, 2001.

MSHA's Response to Recommendation Number Five:

- **Recommendation 5(a): Provide specific training on asbestos-related matters to those Inspectors who visit mines known to contain asbestos.**

  MSHA Response: *"More specialized training on asbestos related matters will be given to Inspectors at their Inspector/Authorized Representative refresher training."*

- **Recommendation 5(b): Implement the training recommendations of the MSHA task force that examined the agency's procedures for air and bulk sampling when asbestos may be present**.

  MSHA Response: *"MSHA will provide the training recommended by its task force to Inspectors and health professionals."*

- **Recommendation 5(c): Post information on the MSHA agency web site that specifically addresses asbestos hazards in the mining industry.**

  MSHA Response: "*MSHA will post on its website information which addresses asbestos hazards in the mining industry."*

OIG's Conclusion to Recommendation Number Five:

We consider this recommendation to be resolved and will be closed pending our receipt of the following:

- Information pertaining to the specialized training on asbestos related matters to be given to Inspectors, including the following: a copy of any training materials prepared in response to this issue, the date of the proposed implementation of the new training, and information of how MSHA will ensure appropriate personnel are covered on the training. The documentation should be provided to this office as soon as the training is prepared, but no later than August 31, 2001.

- A summary of MSHA's final task force recommendations, including specific information on the recommended training, dates of implementation and details of the training to be provided. The information should be submitted to this office as soon as the task force finalizes its recommendation, but no later than August 31, 2001.

- A copy of the information that MSHA proposes to post on its website addressing asbestos hazards in the mining industry. The information should be submitted to this office by June 29, 2001.

MSHA's Specific Comments and Suggested Corrections

In addition to responding to the five recommendations, MSHA suggested seven changes or deletions to the report. We incorporated six of the seven suggestions. Under Finding B, MSHA suggested that we delete the sentence: "Based on this examination, MSHA decided to issue an Advanced Notice of Proposed Rulemaking (ANPR) regarding the asbestos health standards. At the time of this report, MSHA has not issued the ANPR because they are waiting for Office of Management and Budget and DOL clearances on other proposed rules." They requested we insert: "Based on this examination MSHA will consider regulatory action on asbestos." We did not make the suggested change because the original version reflects MSHA's proposed course of action at the time of the evaluation.

APPENDIX
Agency Response

U.S. Department of Labor

Mine Safety and Health Administration
4015 Wilson Boulevard
Arlington, Virginia 22203-1984

MAR 16 2001

MEMORANDUM FOR JOSE M. RALLS
Assistant Inspector General
Office of Analysis, Complaints and Evaluations

FROM: ROBERT A. ELAM
Acting Assistant Secretary for
Mine Safety and Health

SUBJECT: Report No. 2E-06-620-0002
Evaluation of MSHA's Handling of Inspections
at the W. R. Grace & Company Mine in
Libby, Montana

Thank you for the opportunity to respond to your draft report entitled "Evaluation of MSHA's Handling of Inspections at the W.R. Grace & Company Mine in Libby, Montana.

Recommendation 1:
Lower the permissible exposure limit for asbestos to a more protective level.

Recommendation 2:
Use Transmission Electron Microscopy to analyze fiber samples that may contain asbestos.

Recommendation 3:
Address take-home contamination from asbestos by implementing special safety requirements for asbestos and vermiculite mining and milling similar to those that were contained in the 1989 proposed rule.

MSHA Response:
Recommendations 1, 2, and 3 will require rulemaking. Upon confirmation of a new Assistant Secretary for Mine Safety and Health, MSHA will present options for improving asbestos standard and proceed accordingly.

Recommendation 4:
Issue an annual policy directive reminding enforcement personnel of the prohibition of giving advance notice of inspections.

MSHA Response:
The Federal Mine Safety and Health Act of 1977, Mine Act, prohibits providing advance notice of an inspection. Consistent with this recommendation MSHA will issue an annual directive reminding Metal and Nonmetal enforcement personnel of this important prohibition.

Recommendation 5:
Take the following minimum actions regarding training:
(a) provide specific training on asbestos-related matters to those Inspectors who visit mines known to contain asbestos;

MSHA Response:
More specialized training on asbestos related matters will be given to Inspectors at their Inspector/Authorized Representative refresher training.

(b) implement the training recommendations of the MSHA task force that examined the agency's procedures for air and bulk sampling when asbestos may be present; and

MSHA Response:
MSHA will provide the training recommended by its task force to Inspectors and health professionals.

(c) post information on the MSHA agency web site that specifically addresses asbestos hazards in the mining industry.

MSHA Response:
MSHA will post on its website information which addresses asbestos hazards in the mining industry.

Specific Comments and Suggested Corrections to the Report

Page 1. Fourth paragraph, third sentence add taconite mines.

Page 6. Third paragraph, second sentence is incorrect because the regulation applies to mine operator sampling, not MSHA inspectors. Delete it.

Page 8. Fifth paragraph, second sentence, change to "Based on this examination MSHA will consider regulatory action on asbestos." Delete last sentence.

Page 10. Third paragraph, first sentence, change "early 1990's" to "1986."

Page 10. Sixth paragraph, suggest deleting "and does not require specialized knowledge to analyze fibers like the TEM." Analysts have informed us that this is not the case.

Page 12. Second paragraph, second sentence change "1%" to "0.1%"

Page 15. Third paragraph, last sentence change to:

Although MSHA's emphasis on miners' health has not kept pace with safety, MSHA has developed a number of regulations in the health related area such as improvements to its abrasive blasting and drill dust control standard, noise regulation, and Part 46.