

Northeast Minneapolis Community Vermiculite Investigation: A Preliminary Report

September 2004

Thank You!

Thank you for participating in the Northeast Minneapolis Community Vermiculite Investigation (NMCVI). Our study would not be possible without your cooperation... answering a long list of questions ...sharing personal information ...recalling activities from years ago. The many hours invested in this study will increase knowledge about asbestos, ways people have come into contact with asbestos, and possible health effects. We also hope it will benefit people whose health has been affected by asbestos-related disease.

Western Minerals Plant and Libby Asbestos

Vermiculite is a naturally occurring mineral used in insulation (brand name "Zonolite"), construction, and gardening products. From 1924 -1989, most of the world's supply of raw vermiculite ore came from Libby, Montana. This ore is now known to contain a group of mineral fibers called "Libby Asbestos."

Ore from the Libby mine was shipped to many processing plants around the country. From about 1938 to 1989, ore was processed at the Western Mineral Products/W.R. Grace (WM/WRG) plant located at 1720 Madison St. NE in Minneapolis.

At this plant, raw vermiculite was heated until the moisture trapped in the ore boiled, causing it to pop like popcorn. After going through this "exfoliation" process, the vermiculite was light and porous, making it suitable for insulation.

Some of the ore was left behind after it was heated. This waste rock was left in piles outside the plant and was free to anyone. In Northeast Minneapolis, people used the waste rock in their yards, gardens, driveways, barbecues, and other construction projects. Children from the neighborhood also played on piles of waste rock.

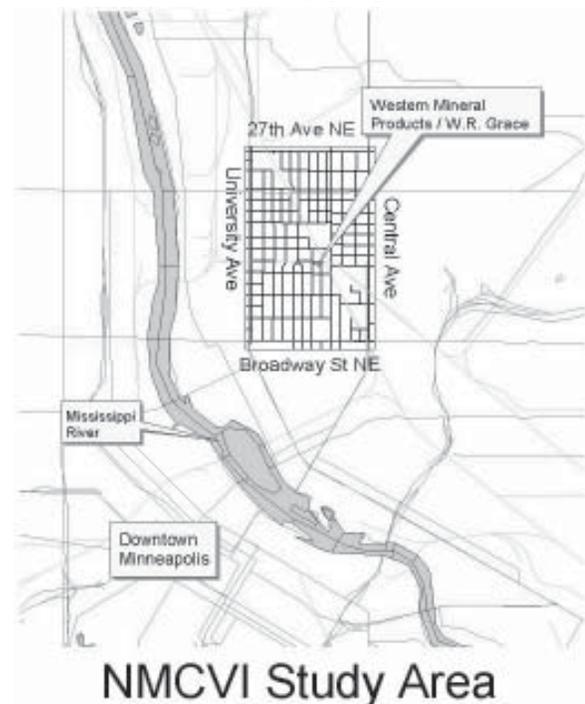
We now know that this waste rock was contaminated with asbestos. When inhaled, asbestos fibers are known to cause lung diseases such as asbestosis, lung cancer, and a rare cancer of the lining of the lung called mesothelioma.

Health studies in Libby, Montana have shown an increase in asbestos-related disease among people who have worked in vermiculite mines and processing facilities. There have also been reports of asbestos-related disease among employee family members, as well as residents of the surrounding community.

Study Update

To learn more about exposures to the community and possible health risks in Northeast Minneapolis, the Minnesota Department of Health (MDH) designed the NMCVI.

We began our study by identifying properties within a "study area," shown on the map. We also included properties outside the study area where contamination was found. We set out to interview all the people who lived on these selected properties between 1938 and 2001. We also included in our study people who handled



Environmental Health Division
Environmental Assessment and Surveillance Section
Site Assessment and Consultation Unit

the waste rock or played on the piles at the WM/WRG site. A total of 6,433 people were interviewed.

Property

The MDH and the U.S. Environmental Protection Agency (EPA) worked together to inspect more than 1,600 properties. Over 260 properties were found to be contaminated with Libby asbestos and were cleaned by EPA. Most of the contaminated properties were inside of the study area. There were 38 in nearby suburbs. The WM/WRG site was cleaned in November 2001. Discovery and removal of existing Libby asbestos is key to preventing contact with people today and in the future.

People

We used two kinds of interviews to learn about people’s contact with Libby asbestos. The first interview helped us identify all the people who had ever lived on a property and any ways that the residents knew that the waste rock might have been brought to and used on the property. The second interview focused on people: where they lived, for how many years, any contact with the waste rock, ways their work might have brought them into contact with asbestos, and other factors that might affect people’s lungs, such as smoking.

Most of the people we interviewed (3,934 or 61%) were current residents of the study area.

Table 1. Demographic Characteristics of Study Participants (n=6,433)

| Total of all Participants: | <u>Living</u> | <u>Deceased</u> | <u>Total</u> |
|----------------------------------|---------------|-----------------|--------------|
| | 5,554 | 879 | 6,433 |
| <u>Gender:</u> | | | |
| Male | 2,772 | 535 | 3,307 |
| Female | 2,781 | 344 | 3,125 |
| Unknown | 1 | 0 | 1 |
| <u>Property Resident Status:</u> | | | |
| Current | 3,934 | 0 | 3,934 |
| Former | 1,557 | 866 | 2,423 |
| Never Resident | 63 | 13 | 76 |
| <u>Age Category:</u> | | | |
| 18-44 | 2,901 | | |
| 45-64 | 1,806 | | |
| 65+ | 834 | | |
| unknown | 13 | | |

Former residents totaled 2,423 (or 38%). Property owners who didn’t live on the property and other non-residents who came into contact with waste came to a total of 76 (1%). For people who were deceased, we interviewed a next-of-kin relative who knew them well enough to answer the questions. **Table 1** shows these groups in more detail.

Table 2 shows the total number of years people lived in the study area. A total of 6,154 people lived in the study area for some period of time between 1938 and 2001. Of these, 1,097 people lived in the study area for more than 25 years. Our interviews also found that 801 people lived within one or two blocks of the plant. Ninety-five of those people lived there more than 25 years.

Table 2. Years of Residence in the Study Area for Participants Reporting (N=6,154)

| <u>Years in Study Area (1938-2001):</u> | <u>Total</u> |
|---|--------------|
| 0- 5 years | 2,558 |
| 6-15 years | 1,557 |
| 16-25 years | 942 |
| 26-34 years | 446 |
| 35+ years | 651 |
| Total | 6,154 |

Pathways

Asbestos has to enter people’s bodies in order to cause health problems. For this to happen, people have to come into contact with asbestos. We call this process an “exposure pathway.” Through research on vermiculite plants in general, the mine in Libby, Montana, records of this plant and interviews with people in the study, we identified the following exposure pathways.

• **Employees breathing in dust at work**

Workers had the highest exposure. Sampling data show that some workers were exposed to asbestos levels that exceed current workplace health standards.

• **Living in the same household with an employee**

People who lived with a worker may have been exposed. Workers may have carried asbestos dust home on their clothing. A household member who routinely handled or cleaned the dusty clothing would be exposed to asbestos.

- **Playing on the piles of waste rock, or**
- **Handling the waste rock**

People who had direct contact with the waste were probably exposed to asbestos fibers. Samples show that the waste contains up to 10% Libby asbestos. Activities, such as playing on the piles or shoveling and moving the waste rock, cause asbestos fibers to be released into the air.

- **Breathing in dust in the air within a block or two of the plant during its years of operation**

People living within 1-2 blocks of the plant while the facility was operating may have been exposed, especially before 1972 when pollution control equipment was installed. A computer simulation suggests that fiber levels in the immediate area were higher than normal urban levels.

- **Living on a contaminated property, or**
- **Disturbing soils or driveways contaminated with the waste rock**

People living on a property with contamination in the driveway or yard may have been exposed to trace amounts of asbestos. Asbestos levels found in driveways and yards were very low. Gardening and landscaping activities could generate very low levels of asbestos fibers.

- **Installing or removing vermiculite insulation**

People who install, remove or disturb vermiculite insulation in the home may be exposed. The insulation product has very low or trace levels of asbestos (less than 1%). However, tests show that activities that disturb

the insulation can produce measurable levels of fibers in the air.

Table 3 shows how many people reported that they were exposed through each of these pathways. Most of the people in the study (3,794 or 59%) told us that they had no exposure through any of these pathways. Some people reported exposure in more than one pathway. For example, 642 (10%) told us of two exposure pathways and 227 (3.5%) described three.

Playing on the piles of waste rock behind the plant was a popular activity for neighborhood kids and was reported by 655 people (10.2%). Of those who told us their age when they played on the piles (384), 19% said they were 5 years or younger, 61% said they were between 6 and 10 years of age, and 14% said they were between 11 and 15 years old.

We found 1,735 people who had lived on a contaminated property. Often, people were unsure of the date when the waste rock was brought to the property, so some of these people may have lived on the property before it was contaminated.

Other factors, such as smoking or exposure to asbestos at work, can also affect peoples' lungs. Because of this, we asked about smoking and work history. Fifty-six percent of people (living and deceased) in the study were regular smokers at one time in their lives. Of people now living,

Table 3. Number and Percent of Participants Reporting Each Exposure Pathway (N= 6433)¹

| | <u>Total</u> | <u>Percent</u> |
|---|--------------|----------------|
| No Exposure Pathway Reported | 3794 | 59.0 |
| <u>Exposure Pathway</u> | | |
| Worked for vermiculite processing facility ² | 56 | 0.9 |
| Lived with a WM/WRG worker | 84 | 1.3 |
| Moved waste rock from WM/WRG | 276 | 4.3 |
| Used waste rock from WM/WRG at home on the lawn or in the garden | 275 | 4.3 |
| Played in or around waste rock piles at WM/WRG | 655 | 10.2 |
| Installed or removed vermiculite insulation | 377 | 5.9 |
| Lived on a contaminated property from 1938-2001 | 1735 | 27.0 |
| Lived within 1 adjoining block of WM/WRG from 1938-1989 | 801 | 12.5 |

1. Participants may have reported more than one pathway

2. Includes secondary contractors

31% were currently smokers. There were 1,650 people (26%), mostly men, who had worked with or around asbestos as part of their job.

Another question we asked was, "Who is your primary care physician?" We did this so that we could provide continuing medical education for health care providers who might take care of people from our study who came into contact with the Libby asbestos. To date, we have visited health care providers at nine area clinics.

**Next Steps:
WM/WRG Employee Study**

As part of NMCVI, we recently contacted former employees of the plant and their family members to collect more information about their work histories.

Final Report and Follow-up

Scientists at MDH will continue to analyze the data from NMCVI, including the employee interviews, over the next several months. We will write a final report based on these results and recommend ways in which people from NMCVI can be followed up in the future to connect asbestos exposure pathways with health effects. In particular, a follow-up of adults who were exposed as children to the waste material deserves further study.

Please return the enclosed evaluation form. Also, help us keep in touch by completing the change of address form, if necessary. Postage for both items is pre-paid.

If you would like a complete copy of the report, please contact Tannie Eshenaur at tannie.eshenaur@health.state.mn.us or by calling (651) 201-4897; 1-800-657-3908; or TTY 1-800-627-3529.

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