

ATSDR Asbestos Activities

Areas of Activity

- Asbestos contaminated vermiculite projects in Libby, Montana
- National Asbestos Exposure Review (NAER)
- Naturally occurring asbestos (NOA)
- Demolition-related issues
- Identification of scientific gaps in asbestos knowledge

Libby, Montana

The Libby vermiculite mine was in operation from the 1920s to 1990. During this time, it produced most of the world's vermiculite ore (70%–80%). The raw ore, which was found to be contaminated with asbestos and various asbestiform fibers, had been shipped to over 200 locations in the United States.

In 1999, the Montana Department of Health, the U.S. Environmental Protection Agency (EPA), and local health care providers asked ATSDR to help evaluate the health effects of exposure to this contaminated ore. A brief summary of the activities undertaken are listed below:

ATSDR activities in Libby

- Public health assessment
- Mortality review
 - Demonstrated elevated mortality for lung cancer and asbestosis-related deaths
- Community medical screening
 - Summary of results
 - Most participants had multiple exposure pathways
 - Workers and household contacts had the highest prevalence of pleural abnormalities
 - Unexposed population – 0.2%–0.4%
 - Libby, MT population – 18%
 - Workers – 51%
 - Household contacts – 26%
- Usefulness of CT scanning among persons with indeterminate chest x-rays
- Ongoing periodic medical screening
- Tremolite Asbestos Registry (TAR)
 - Enrollment
 - Ongoing
 - To date, approximately 3,500 people from Libby have been enrolled
 - Potential for adding other U.S. sites that received ore
 - Uses
 - Maintain contact information
 - Provide health education and communication
 - Evaluate cases that resulted in death
 - Support future research studies
 - Promote therapeutic interventions

Libby vermiculite: What have we learned?

- Libby vermiculite ore is contaminated with asbestos and other asbestiform minerals
- Environmental exposure may result in adverse health effects
- Such exposures were possible in Libby and locations that received Libby ore
- High resolution CT scanning of the chest can help identify pleural abnormalities in individuals with indeterminate chest x-rays

National Asbestos Exposure Review (NAER)

ATSDR implemented the National Asbestos Exposure Review (NAER) to determine if any health hazards were present at sites that received the contaminated ore from Libby.

Important facts

- More than 200 sites received Libby vermiculite
- Multiple potential asbestos exposure pathways exist, from plant to community
- Waste rock (stoner rock) was provided to communities free of charge
- Potential existed for ambient air exposures
- Possible occupational exposure to workers and “take home” exposure to household contacts

Selection of Phase 1 sites

- In the first phase of the review, 28 priority sites are being evaluated. These sites, referred to as the Phase 1 sites, were selected on the basis of the following criteria:
 - EPA mandated further action at the site because of current contamination at the site, or
 - the site was an exfoliation (popping) facility that processed more than 100,000 tons of Libby vermiculite.

ATSDR activities at vermiculite sites outside of Libby

- Health consultations
 - Site visits were conducted in collaboration with EPA and state and local health departments
 - In general, there is no significant current risk of community exposures near sites
 - Judging from 12 consults completed to date, workers and household contacts may have had past asbestos exposures and may be at risk
- Health statistics reviews
 - Examination of death certificates and/or cancer registry data
 - Asbestos-related disease outcomes of interest
 - asbestosis
 - lung cancer
 - mesothelioma
 - gastrointestinal (GI) tract cancer
 - To date, five completed reviews have not demonstrated any excess morbidity or mortality from asbestos-related diseases in the communities

- Pilot Mesothelioma Surveillance Project in New York, New Jersey, and Wisconsin
 - Objectives
 - Develop a surveillance instrument to obtain detailed exposure history from persons newly diagnosed with mesothelioma
 - Evaluate the association between Libby asbestos-containing vermiculite and mesothelioma
 - Completed interviews
 - New Jersey – 134 cases
 - Wisconsin – 9 cases
 - New York – Interviewing to begin in the near future
- Disease progression in former vermiculite workers in Marysville, Ohio
 - Cooperative agreement with the University of Cincinnati Medical Center
 - Follow-up medical screening of workers originally screened in 1980
 - Original 1980 protocol used
 - Current chest x-ray and spirometry findings compared to previous findings
 - Data collection complete
 - Data analysis underway
 - Preliminary results (have not yet gone through external peer review by ATSDR, as required by CERCLA)
 - Increased prevalence of pleural abnormalities
 - Rate has increased from 4% in 1980 to 26% currently
 - Mortality study in progress
 - Completed report is anticipated summer 2006

Naturally Occurring Asbestos (NOA)

Exposures to naturally occurring asbestos occur as a result of contact with natural outcroppings, rocks, and weathered material through activities that are not normally associated with extraction methods (mining) or commercial use of asbestos. These naturally occurring asbestos deposits are found in many areas in the United States. For a map of such locations in the Eastern United States, visit the United States Geological Survey (USGS) Web site

<http://pubs.usgs.gov/of/2005/1189/>

Major issues related to environmental asbestos exposure

- Interpretation of soil data and relationship to air levels
- Usefulness of activity based sampling for asbestos in soil
- Assessment of health affect of short duration and/or intermittent exposures
- Mineralogy of asbestos and implications of exposures to different fiber types

Gaps in scientific knowledge

In general, we need to learn more about the following:

- health effects experienced by former workers and household contacts at other sites receiving asbestos-contaminated ore from Libby,
- health effects of low-level and/or short-duration asbestos exposure, and
- toxicology and potential health effects of amphibole asbestos and other asbestiform fibers.

Additional information will also help in developing or evaluating

- Disease risk models for environmental exposure
- Exposure and disease biomarkers
- Digital vs. standard film radiographs for “B-reading” for pneumoconiosis

Questions and Answers

Q1: What important message(s) would you like to convey regarding exposures?

A1: The completed health consultations and health statistics reviews for sites outside of Libby have not revealed any evidence of widespread community exposures or an excess of asbestos-related diseases. So, for these sites, there does not appear to be current risk of exposure to general community members.

We recommend that workers and household contacts who are concerned about their exposure status be evaluated by their primary care physician or a physician with expertise in asbestos-related diseases. Physician evaluation also would be recommended for more isolated exposures, as in the case of children who played on piles of waste rock (stoner rock).

Q2: What message(s) do you have for clinicians?

A2: ATSDR is developing physician education materials on asbestos exposure, asbestos-related diseases, and assessment. These materials should be especially helpful to clinicians whose main practice is not environmental and occupational health. Some of the topics covered include environmental and occupational exposure histories, differential diagnosis, and different screening methods. Contact Charles Green at 404-498-0297 or clg8@cdc.gov for the materials.

Once a detailed environmental and occupational exposure history has been taken, the physician has to determine the patient’s risk. Therefore, a basic understanding of risk assessment is necessary for the physician to accurately characterize the patient’s risk and to explain this and the recommended course of treatment to the patient.

Finally, the most important messages we want clinicians to convey to their patients are the following:

1. Avoid future asbestos exposure
2. Stop smoking
3. Obtain general supportive medical care (e.g. immunizations, health maintenance, etc.)