Screening, Removal, and Restoration Procedures for Libby Amphibole Contaminated Properties in Libby, Montana

Mike Cirian, P.E.
Remedial Project Manager
Field Team Leader
EPA Libby Asbestos Project

April 5, 2012
Overview

- Project Background
- Screening Procedures
- Removal Techniques
- Restoration Activities
- Conclusions
Project Background - Location

- Libby is located in northwest Montana (Lincoln County)
Project Operable Units
Project Background - History

- Over 75 years of vermiculite-mining activities
  - Estimated that the Mine supplied over 80% world’s vermiculite
- Vermiculite was contaminated with virulent form of asbestos – Libby amphibole (LA)
- Vermiculite was widely used as
  - Building insulation
  - Soil amendment (garden, flowerbed, etc.)
  - Backfill material (utility lines, septic tanks)
  - Lightweight construction aggregate
1999 – News of elevated deaths and incidents of asbestos-related diseases prompted EPA to dispatch an Emergency Response Team to Libby.

EPA was challenged with identifying source areas and screening individual properties and developing systematic removal actions.
Screening Techniques

◆ Phase 1 Investigation
◆ Remedial Investigation
  ◆ Contaminant Screening Study
◆ Screening Results
Phase 1 Investigation

*Is immediate action required to protect public health? What are the source areas and LA asbestos concentrations?*

- **Initial Investigation**
  - 1999 through 2001
  - Focused on mining activity and vermiculite processing areas
  - Limited residential investigations
  - Problem more widespread than anticipated
Contaminant Screening Study

Is contamination present at the property?

- Listed on National Priorities List in 2002
  - 180 mi² study area established around Libby
- EPA Required Rapid Investigation Process
  - Intensive property characterization program
  - Door to door visits by neighborhood
  - Environmental data and resident interviews
- Areas Inspected:
  - Interior structures – insulation/building materials
  - Exteriors – high-traffic areas and special use areas
Screening Results

- Approximately 4,000 Properties Investigated
  - *EPA’s largest single season residential investigation program in history*
  - Approximately 1,700 required action
    - based on EPA’s site-specific cleanup levels
  - Not all properties screened
    - refusals, out-of-town, incomplete parcel data
- Screening Is Still Ongoing
Work Plan Design

*Where is the contamination?*

- **Design Field Investigation**
  - Supplement previously collected data
  - Determine extent of contamination
  - Detailed field reconnaissance
- **Draft Work Plan**
  - Calculate volume of material to be removed
    - Attic insulation and soil volume
  - Utilize construction plans and specs to develop work plan
Work Plan Design

- Field Review of Draft Work Plan
  - Revisit subject property
  - Identification of any changed conditions
  - Solicit homeowner input

- Finalize Work Plan and Restoration Plan
  - Incorporate homeowner’s input
  - Develop site-wide general notes for all designs
  - Ready for contract
Removal Process

Control of ACM is of paramount importance!

◆ Pre-Removal Activities
  ◆ Relocate residents during removal activities
  ◆ Tailgate planning and safety meeting
    – Discuss site setup and load out plan
    – Address health and safety concerns
  ◆ Documentation of pre-existing conditions
    – Digital photograph and checklists/logbooks
Control of Material

- Engineering and Administrative Controls
  - Decontamination trailers
  - Interior - Negative air and plastic enclosures
  - Exterior - Exclusion zones
  - Wet down material (interior and exterior)
  - Single handling of material
Controls: Decon Trailers

3-stage process

Setup considerations

Water supply and capture
Controls: Interior

Minimize particulate generation

Negative pressure enclosure

HEPA filtered exhaust air
Controls: Wet Material

Exterior and Interior

Pre-wetting of material

Too much water results in muddy/slurry conditions
Controls: Single Handle

Live load material: excavator and vacuum

“Moving” truck loading pad: gravel roads/poly sheeting

Covered trucks and blue boxes
Interior Work
Interior Work
Exterior Work
Waste Disposal

- Lincoln County Asbestos Landfill
  - Contaminated building debris
  - Vermiculite insulation

- Former Vermiculite Mine
  - Contaminated soil
Waste Disposal – Landfill Operations

Tent enclosure to control dust

Water spray during dumping
Waste Disposal – Mine Operations

Haul trucks stay on pavement to transfer area

Dedicated trucks haul to top of mine
Air Monitoring Program

- Personal Air Monitoring
  - OSHA 1926.1101 App B
- Perimeter Air Monitoring
- Clearance Sampling
- Equipment Monitoring
  - Containment exhaust
  - Decontamination trailers
Restoration Activities

- Backfill
- Landscaping
- Re-insulation
- Repair damaged items
How protective is the Remedy?

- Activity Based Sampling (ABS)
- Ambient Air Sampling
- ERS
- O&M
Conclusions

- Successful Process Attributed to:
  - Effective screening and design investigation process
  - Soliciting homeowner input on work plans
  - Employing standardized construction specs across all properties
  - Controlling material during removal activities
  - Detailed restoration plans
Thank You!

◆ Questions?

◆ EPA Libby Asbestos Website
  ◆ www.epa.gov/libby/

◆ Mike Cirian, PE
  ◆ Cirian.Mike@epamail.epa.gov
  ◆ 406-293-6194