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

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Overview

- Project Background
- Screening Procedures
- Removal Techniques
- Restoration Activities
- Conclusions
Project Background - Location
- Libby is located in northwest Montana (Lincoln County)

Project Background - History
- Over 75 years of vermiculite-mining activities
  - 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
Project Background - History

- 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

- Over 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
- Seven Operable Units (OU’s)
- Screening Is Still Ongoing

Removal Techniques

- Work Plan Design
- Removal Process
- Air Monitoring Program
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

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
Work Plan Design

Removal Techniques

- Work Plan Design
- Removal Process
  - Pre-removal activities
  - Removal activities
  - Control of material
  - Control of personal exposure
  - Waste disposal
- Air Monitoring Program
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

- Removal Activities
  - Control of material: engineering and administrative controls
  - Control of personnel exposure: personal protective equipment (PPE)
  - Over 1,200 Residential and Commercial Properties cleaned to date.
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: Exterior**

- Contractor has a good “plan of attack” for removal
- Establish exclusion zones
- Suppression of all dust
**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
Exterior Work

Control Personal Exposure:
Personal Protective Equipment

- Respirator with HEPA filter
- Tyvek
- Booties or Rubber Boots
- Gloves
- Duct tape
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

Removal Techniques

- Work Plan Design
- Removal Process
- Air Monitoring Program
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
- Education

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/](http://www.epa.gov/libby/)

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