

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

Mike Cirian, P.E.
On-site Remedial Project Manager
EPA Libby Asbestos Project

October 15, 2009

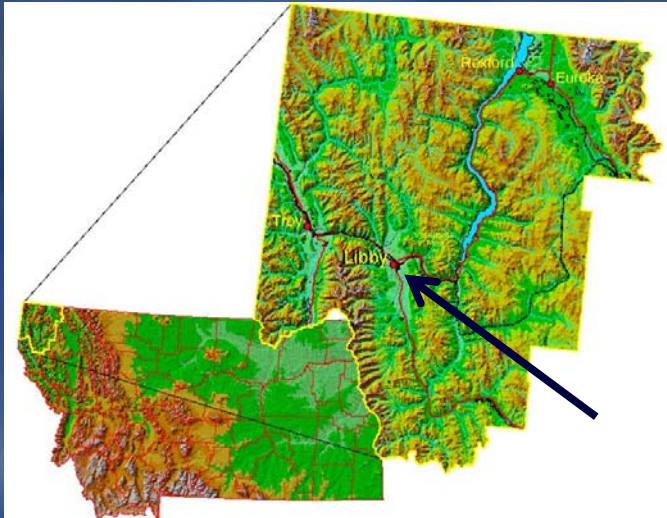


Overview

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

Project Background - Location

- u Libby is located in northwest Montana (Lincoln County)



Project Background - History



- u Over 75 years of vermiculite-mining activities
 - u Mine supplied over 80% world's vermiculite
- u Vermiculite was contaminated with virulent form of asbestos – Libby amphibole (LA)
- u Vermiculite was widely used as
 - u Building insulation
 - u Soil amendment (garden, flowerbed, etc.)
 - u Backfill material (utility lines, septic tanks)
 - u Lightweight construction aggregate

Project Background - History

- u 1999 – News of elevated deaths and incidents of asbestos-related diseases prompted EPA to dispatch an Emergency Response Team to Libby
- u EPA was challenged with identifying source areas and screening individual properties and developing systematic removal actions



Screening Techniques

- u Phase 1 Investigation
- u Remedial Investigation
 - u Contaminant Screening Study
- u Screening Results



Phase 1 Investigation

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

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

Contaminant Screening Study

Is contamination present at the property?

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

Screening Results

- u Over 4,000 Properties Investigated
 - u *EPA's largest single season residential investigation program in history*
 - u Approximately 1,700 required action
 - based on EPA's site-specific cleanup levels
 - u Not all properties screened
 - refusals, out-of-town, incomplete parcel data
- u Seven Operable Units (OU's)
- u Screening Is Still Ongoing

Removal Techniques

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

Work Plan Design

Where is the contamination?

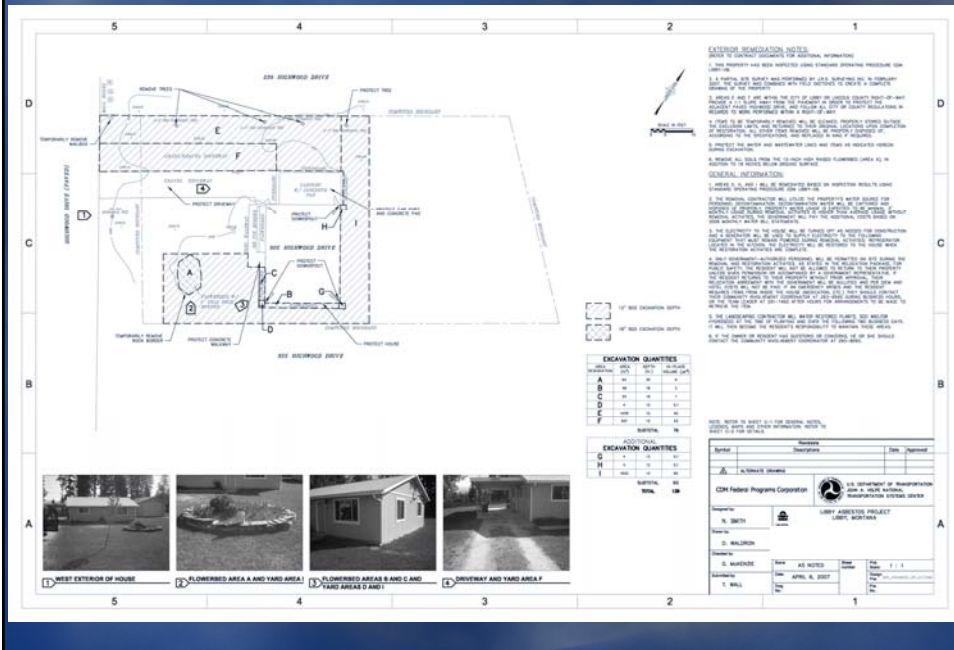
- u Design Field Investigation
 - u Supplement previously collected data
 - u Determine extent of contamination
 - u Detailed field reconnaissance
- u Draft Work Plan
 - u Calculate volume of material to be removed
 - Attic insulation and soil volume
 - u Utilize construction plans and specs to develop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

Work Plan Design

- u Field Review of Draft Work Plan
 - u Revisit subject property
 - u Identification of any changed conditions
 - u Solicit homeowner input
- u Finalize Work Plan and Restoration Plan
 - u Incorporate homeowner's input
 - u Develop site-wide general notes for all designs
 - u Ready for contract



Work Plan Design



Removal Techniques

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

Removal Process

Control of ACM is of paramount importance!

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

Removal Process

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

Control of Material

- u Engineering and Administrative Controls
 - u Decontamination trailers
 - u Interior - Negative air and plastic enclosures
 - u Exterior - Exclusion zones
 - u Wet down material (interior and exterior)
 - u 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



Interior Work



Interior Work



Exterior Work



Control Personal Exposure: Personal Protective Equipment

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



Waste Disposal

- u Lincoln County Asbestos Landfill
 - u Contaminated building debris
 - u Vermiculite insulation
- u Former Vermiculite Mine
 - u 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

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

Air Monitoring Program

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



Restoration Activities

- u Backfill
- u Landscaping
- u Re-insulation
- u Repair damaged items



How protective is the Remedy?

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



Conclusions

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

Thank You!

- u Questions?
- u EPA Libby Asbestos Website
 - u www.epa.gov/libby/
- u Mike Cirian, PE
 - u Cirian.Mike@epamail.epa.gov
 - u 406-293-6194