

Slide Show Presentation



Asbestos Awareness Training Course

Notice to viewer:

This sample manual includes standard, up to date information based on industry standards and current EPA and OSHA requirements. We can customize this material to meet state and local requirements in your area. Feel free to contact us for a quote. This color version has a much lower resolution and print quality than the electronic version or printed manuals we deliver. This is done to make the entire document viewable from our website and for copyright protection.

TSI

www.TSItraining.com

Call 1-866-666-8438 Fax 1-866-813-9804

Slide Show Presentation



Asbestos Awareness Training Course

Notice to viewer:
 This sample manual includes standard, up to date information based on industry standards and current EPA and OSHA requirements. We can customize this material to meet state and local requirements in your area. Feel free to contact us for a quote. This color version has a much lower resolution and print quality than the electronic version or printed manuals we deliver. This is done to make the entire document viewable from our website and for copyright protection.

TSI
www.TSItraining.com
 Call 1-866-666-8438 Fax 1-866-813-9804




**Section 1
 Asbestos Facts**

TSI
www.TSItraining.com
 Call 1-866-666-8438 Fax 1-866-813-9804

SOME FACTS ABOUT ASBESTOS

- Used in over 3000 commercial products
- Extremely long, thin flexible fibers that can be woven
- High tensile strength
- Resistance to chemical and thermal degradation
- High electrical resistance
- Fire resistant
- Good insulator



TSI P.1

Asbestos minerals

	Chrysotile		Actinolite
	Amosite		Tremolite
	Crocidolite		Anthophyllite

TSI P.2

Asbestos in the U.S.

- Identified in 20 states, mined in 17
- Found in mountainous areas of country
- Most deposits contain <6% asbestos
- Few deposits >50% asbestos




USEPA photo of serpentine rock

TSI P.3

Asbestos in US

- 324 locations - Eastern US
- 36 locations - Central US
- 48 locations in the Rocky Mountain States
- 113 locations in Southwestern States
- More expected in Pacific coast states, still investigating



TSI P.3

Worldwide Asbestos

- World production of asbestos was estimated to be 2. 2 Mt in 2007
- Russia is leading producer
- 95% of asbestos from Russia, China, Kazakhstan, Canada, Brazil, and Zimbabwe



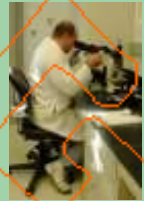
TSI

P4

Asbestos Containing Materials

USEPA & OSHA

- More than 1% asbestos



TSI

P4

Uses of asbestos

- **USEPA Sample List of Suspect Asbestos - Containing Materials** P.5
- **Commercial & School Buildings** P.6



- **Residential Buildings** P.6

P6-7

TSI

Categories of ACM

- Surfacing ACM
- Thermal System Insulation ACM (TSI)
- Miscellaneous ACM



TSI

P7

Categories of ACM

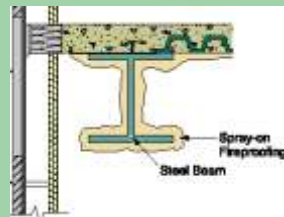
- Surfacing – "...material that is sprayed-on, troweled-on, or otherwise applied to surfaces such as acoustical plaster on ceilings and fireproofing on structural members..."

TSI

P7

Categories of ACM

- Surfacing



TSI

P7

Categories of ACM

- TSI – "...material applied to pipes, fittings, boilers, breeching, tanks, ducts, or other components to prevent heat loss or gain, or water condensation, ..."

TSI

P.7

Categories of ACM

TSI



Pipe Insulation & Fittings

TSI

P.7

Categories of ACM

TSI



Valve Insulation



Duct Insulation

TSI

P.7

Categories of ACM

TSI

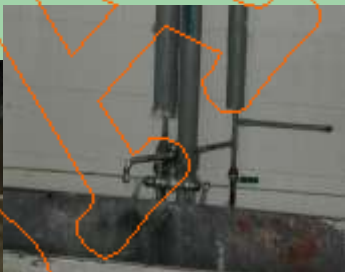


TSI

P.7

Categories of ACM

TSI



TSI

P.7

Categories of ACM

- Miscellaneous – "...material on structural components, structural members or fixtures, such as floor tile or ceiling tile, and does not include surfacing or TSI."

TSI


P.7

Categories of ACM

Miscellaneous

Roofing

Siding





TSI P.7

Categories of ACM

Miscellaneous

Fire Doors



TSI P.7

Categories of ACM

Miscellaneous

Flooring





TSI P.7

Categories of ACM

Miscellaneous

Drywall & Joint Compound





TSI P.7

Categories of ACM

Ceiling Tile

Miscellaneous



TSI P.7

Categories of ACM

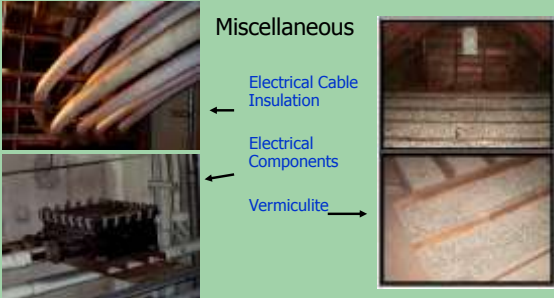
Miscellaneous

Hard Plaster



TSI P.7

Categories of ACM




Miscellaneous

- ← Electrical Cable Insulation
- ← Electrical Components
- Vermiculite

TSI P.7

Categories of ACM



Miscellaneous

Light Fixture Paper

TSI P.7

Asbestos Bans

NESHAP Bans

- Spray-applied fireproofing - 1973
- Preformed block pipe, boiler, tank, duct insulation - 1975
- Spray-applied decorative uses - 1978
- Other decorative uses - 1990

TSI P.8

Asbestos Bans

EPA Ban and Phase Out Rule 1989-91

- Corrugated paper
- Roll board
- Commercial paper
- Specialty paper
- Flooring felt
- New uses of asbestos

TSI P.8

Asbestos Bans

Examples of Products Not Banned


<ul style="list-style-type: none"> • Asbestos cement (transite) • Asphalt roofing products • Ceiling Tile • Resilient flooring (tile & sheeting) • Mastics • Millboard • Wallboard & joint compound 	<ul style="list-style-type: none"> • Friction products <ul style="list-style-type: none"> • disc brakes & brake drums • transmission parts & clutch facings • Clothing & cloth products • Caulking & glazings • Light concrete • All other uses not mentioned in bans
--	---

TSI P.8

Enforcing the Bans

EPA does not track asbestos products

- manufacture,
- processing or
- distribution in commerce



TSI P.8

Enforcing the Bans :

Determining asbestos content:

- Material Safety Data Sheets.
- Construction specifications
- Written verification in new construction or renovation (cut sheets).
- **Laboratory testing.**



TSI

P.8

Active U.S. Ban Legislation

Senate passed Ban Asbestos in America Act

- Bans nearly all asbestos uses
- Exempts naturally occurring fill material
- Other exemptions include DOD, NASA, & chlorine process

Similar bill in House committee



TSI

P.9

Asbestos Exposure

- Asbestos fibers become airborne & inhaled
- Friable & Non-Friable
 - Material can be crumbled, pulverized, reduced to powder by hand pressure
 - Potential to release fibers in the air



TSI

P.9

Asbestos Exposure

- Intact vs. Non-Intact
 - Asbestos no longer in material matrix (crumbled, pulverized)
 - Current ability to release fibers in air



TSI

P.10

Section 2 Asbestos Diseases

TSI

www.TSItraining.com
Call 1-866-666-8438 Fax 1-866-813-9804

Health Effects of Asbestos

- Primary route of exposure is inhalation
- Secondary route is ingestion
- Latency Period of 10-40 years
- 10,000 deaths/ year
 - Mining
 - Insulating
 - Milling
 - Ship building
 - Manufacturing
 - Construction



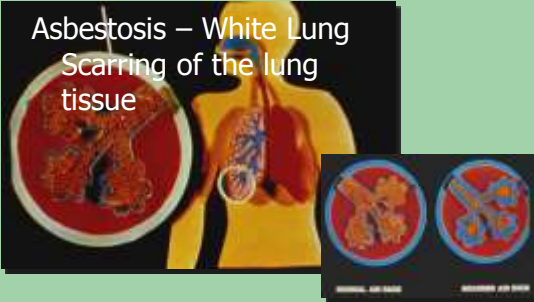
Worker handling amosite asbestos at a pipe insulation manufacturing plant in Tyler, TX in the early 1970's. CDC Photo

TSI

P.11

Asbestos Diseases

Asbestosis – White Lung
 Scarring of the lung tissue



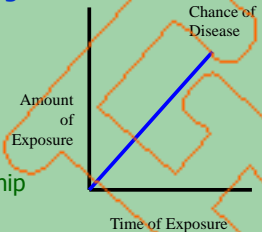
TSI

P.11

Asbestos Diseases

Asbestosis – White Lung

- 1,500 deaths/ year
- 20,000 hospital visits
- 10-20 yr latency period
- Shortness of breath common symptom
- Dose-response relationship




TSI

P.11-12


Asbestos Diseases

Lung Cancer

- 4,000 deaths/ year
- Dose-response relationship
- 20 yr latency period



Healthy Lung



Lung Cancer


TSI

P.12

Asbestos Diseases

Lung Cancer

- Increased risk from smoking 10x
- Increased risk from industrial asbestos exposure 5x
- Combined increased risk over 50x

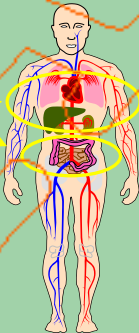


TSI

P.12

Asbestos Diseases

- **Mesothelioma**
 - Cancer of the lining of the chest cavity or abdomen.
 - 2,500 deaths/ year
 - Rare Cancer
 - No dose-response relationship
 - Always fatal
 - 20-40 yr latency



TSI

P.12

Other Diseases

- Pleural plaques
- Pleural thickening
- Pleural effusion

- Esophagus
- Stomach
- Colon
- Pancreas

TSI

P.13

Asbestos Diseases

- Risks Associated with Low Level Asbestos Exposure



TSI

P.11



Section 3 Controlling Asbestos Exposure

TSI

www.TSItraining.com
Call 1-866-666-8438 Fax 1-866-813-9804

Controlling Exposure

1. Identify ACM & Hazard Level
2. Control access
3. Proper Clean-up & Housekeeping
4. Maintain in-place ACM
5. Use proper procedures methods
6. Protect personnel



TSI

P. 14

Identifying Asbestos Hazards

Asbestos Inspection Procedures

- Identify suspect asbestos materials
- Collect and analyze suspect asbestos material samples
- Evaluate the hazard level posed by the ACM.



TSI

P.14-15

Controlling Access to ACM

- Notify occupants
- Review locations of ACM with contractors
- Post signs in key areas



TSI

P. 15

Clean Up & Housekeeping

- Prevents dust, debris, & materials from releasing asbestos
- Incidental asbestos clean up
 - May be performed by trained custodial & maintenance personnel
 - Work Practices
 - Wet Methods
 - HEPA Vacs
 - Prompt clean up



TSI

P. 15-16

Housekeeping Procedures

- Keep surfaces free of dust, debris, and waste
- Clean up all spills and releases asap
- HEPA-vac or steam clean carpets
- Wet wipe or HEPA vac any horizontal ACM
- Asbestos flooring care:
 - Strip w/ low-abrasion pads under 300 RPM
 - Only dry buff waxed floors



TSI

P. 16

Housekeeping Procedures

What *not* to do:



- Cut ACM with a high speed abrasive disc saw
- Sand, grind or drill ACM
- Use compressed air on ACM or ACM dust surfaces
- Any dry clean-up, sweeping, shoveling of ACM dust or debris

TSI

P. 16

Maintaining ACM

Advantages

- ACM remains (performance)
- Minimal facility disruptions
- Low initial cost
- No/ minor waste generated

Disadvantages

- ACM hazard remains
- Material may need repaired
- Future removal costs may be higher

TSI

P. 17

Maintaining ACM

Control Options



- O&M
- Encapsulation
- Enclosure
- Repair

TSI

P. 17

ACM Removal

Activities

- Stripping from substrate
- Removing ACM components & pieces



Required prior to demo or renovation

Recommended for ACM in poor condition

TSI

P. 18

ACM Removal

Advantages

- ACM no longer remains
- Life cycle cost may be less expensive than other alternatives

Disadvantages

- Areas of facility must be regulated
- High initial cost
- Large amount of waste generated
- Many facility disruptions

TSI

P. 18

Personal Protective Equipment

- May be needed for clean up, maintenance, & abatement
- Find our requirements before starting activity
- Needed to wear PPE
 - Medical approval
 - Fit testing
 - Respiratory Protection Plan
 - Additional training



TSI

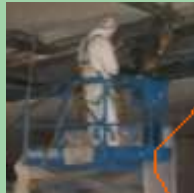
P. 18

Section 4 Asbestos Abatement Activities

TSI
www.TSItraining.com
 Call 1-866-666-8438 Fax 1-866-813-9804

Asbestos Abatement

- Removal
- Encapsulation
- Enclosure
- Repair



TSI

P. 19

Pre-Abatement Activities

Building Owner	Asbestos Contractor	Asbestos Consultant
<ul style="list-style-type: none"> • Initiate Project • Occupant Notifications 	<ul style="list-style-type: none"> • Agency Notifications • Worker Protection 	<ul style="list-style-type: none"> • Define Project Scope • Air Monitoring

TSI

P.19

Contractor Duties

- Company License
- Employee training & notification
- Worker protection
 - Asbestos training certificates
 - Safety training
 - Medical clearance
 - Respirator fit tests
 - Tools and removal equipment
 - Safety equipment



TSI

P.19

Work Area Isolation

Wide range of requirements

Factors Include

- Material Type
- Material Condition
- Historical Data
- Specifications
- Building Use & Occupancy
- Future Plans



TSI

P.20

Negative Pressure Enclosures

- Any configuration, sealed
- Air filtration devices (AFD's)
- Negative pressure
- Draws outside air in, cleans inside air



TSI

P.20

Glovebags

- Usually TSI
- Sealed from outside
- Removal occurs inside

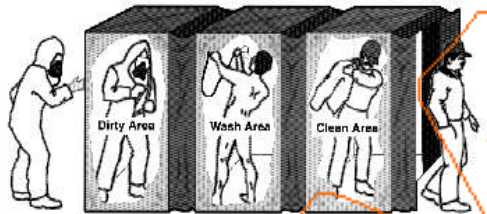


TSI

P.21

Decontamination Units

- Keeps asbestos inside work area
- Larger projects often use 3 stage decon



TSI

P.21

OSHA Work Practices



WET METHODS

- Reduces airborne fiber concentrations
- Material dislodges from substrate easier
- Requires use of surfactant or wetting agent

TSI

P.22

OSHA Work Practices



HEPA VACUUMS

- Must use 'asbestos certified' vacuum
- HEPA filter retains 99.97% of all fibers @ 0.3 microns in diameter
- Various canister sizes and horsepower motors available

TSI

P.22

OSHA Work Practices

- Containerize waste as soon as practical, but no later than end of work shift
- Prevents the waste from drying out and releasing asbestos fibers into the air



PROMPT CLEAN-UP

TSI

P.22

Safety Hazards

- All construction activities have safety hazards
- Abatement control methods can increase safety hazards
- Hazards include:
 - Electrical
 - Ladders & scaffolding
 - Fire
 - Heat



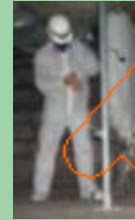
TSI

P.23

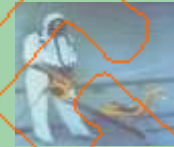
Air Sampling



Personal



Environmental



Final Clearance

TSI

P.23

Asbestos Waste Disposal

- Wet waste
- Containerize
- Labels
- EPA-approved landfill
- Building owner's property
- Waste Manifest



TSI

P.24

Section 5 Current Events



TSI

www.TSItraining.com
 Call 1-866-666-8438 Fax 1-866-813-9804

Current Events

World Trade Center/ Lower Manhattan Test and Clean Program

- Test for remaining dust
- 2002 program cleaned/ tested 4100 homes
- Coordinating proper demolitions



TSI

P.25

Libby, Montana

- One of largest asbestos exposure cases in US
- Over 7000 individuals tested 2000-01
- 18% have asbestos-related abnormalities
- Typical products
 - concrete aggregate
 - soil conditioners
 - fertilizer carriers
 - Attic & wall insulation
 - potting soil



TSI

P.25

Libby, Montana

Mine Facts:

- Opened in 1921
- 80% world's supply of vermiculite
- W.R. Grace purchased in 1963
- Stopped production in 1990
- Stopped shipments in 1992
- Average amphibole asbestos content of 4 to 6%



TSI

P.26

Libby, Montana

- Most of clean-up is completed
- Abatement of 794 properties by end of 2006
- Removed 400,000 tons contaminated soil
- Screened over 3500 properties in Libby area
- Screen 1000 properties in Troy, MT area
- EPA costs over \$150,000,000



TSI

P.26

Son's of Libby Assessment



TSI

P.26

Son's of Libby Assessment

- 243 sites received Libby vermiculite
- ATSDR investigating 28
- Testing & remediation occurring



TSI

P.26

Vermiculite Insulation Awareness Campaign



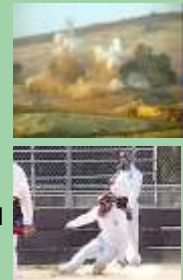
- Do not disturb
- Limit activity level in attic
- Keep children out
- Do not remove it yourself
- Hire asbestos professionals to safely remove the material

TSI

P.27

Naturally Occurring Asbestos (NOA) in California

- Eldorado Hills community
- EPA assessed sports venues, playgrounds, and gardens at schools, parks, and playgrounds
- Testing shows that asbestos fibers were found in almost all the samples collected



TSI

P.27

Naturally Occurring Asbestos (NOA) in California

- Clear Creek Management Area (CCMA) is located on one of the largest naturally occurring asbestos deposits in the world
- 30,000-acre serpentine deposit is used by thousands of visitors each year



TSI

P.27

Litigation

- Study by RAND Institute for Civil Justice issued May 10, 2005
 - Over 730,000 people in the US have filed claims
 - Claims cost businesses over \$70 billion by end of 2002
 - Claimants receive about \$0.42/ \$1.00 spent on litigation
 - Defense costs are about \$0.31/ \$1.00



TSI

P.28

Litigation

- Study by RAND Institute for Civil Justice issued May 10, 2005
 - Plaintiff attorneys and other related costs are about \$0.27/ \$1.00
 - 90% of all new claims by people with no cancerous injuries
 - Mesothelioma cases doubled 1994-2002, still small percentage
 - Increasing claims brought by non-asbestos trades



TSI

P.28

THE END

TSI

