

Hazardous Materials in Construction

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LEGEND 
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An Overview of the Occupational
and Environmental Concerns for
Hazardous Materials Frequently
Encountered in Construction

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Asbestos
Containing
Materials

02

Lead-Based
Paints

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Miscellaneous
Hazardous
Materials

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Overview

01

Asbestos Containing Materials

Asbestos Ban and Phase Out Rule

Which Statement is True?

- a) The rule went into effect in 1982 and has been largely successful
- b) The rule went into effect in 2003 and has been largely successful
- c) The rule was written, but never put into effect
- d) The rule went into effect in 1989 and was promptly overturned in 1991

What is Asbestos?

- A term applied to 6 asbestiform minerals, that when milled break into microscopic, sharp fibers
 - Serpentine: Chrysotile (85% of all asbestos used in US buildings)
 - Amphiboles: Amosite, Tremolite, Crocydolite, Actinolite, and Anthophyllite
- Many desirable properties: great sound absorber; high tensile strength; low-cost; high resistance to fire, heat, and electricity; and good resistance to chemical breakdown

What are the Dangers of Asbestos?

- Asbestosis
 - Fibrosis of the lungs
 - Scarring is irreversible
- Cancers
 - Lung Cancer
 - Stomach Cancer
 - Mesothelioma
- Most due to chronic exposure and have long latency periods (10-40 years)

Regulations

- WI DHS 159 “Certification and Training”
 - Licensing Requirements
- WI DNR 447 “Control of Asbestos Emissions”
 - Environmental Protection
 - WI NESHAP Enforcement
- US OSHA 29 CFR 1926.1101 “Asbestos”
 - Worker Protection
- And Others

ACM Definitions (1 of 3)

- WI DHS 159 “Certification and Training”
 - Asbestos Containing Material: a material or product that contains more than 1% of asbestos, as determined using the method specified in 40 CFR 763, Appendix E to Subpart E, Section I, “Polarized Light Microscopy”, and a materials meeting the definition of suspect asbestos containing materials
 - Suspect Asbestos Containing Materials: vermiculite insulation, unless a recommended EPA sampling and analysis protocol specific to vermiculite insulation proves that it does not contain asbestos, and any untested materials used in or on a building component, except for metal, glass, wood, or fiberglass

ACM Definitions (2 of 3)

- WI DNR 447 “Control of Asbestos Emissions”
 - Friable Asbestos Containing Material: any material containing more than 1% asbestos as determined using the method specified in Appendix E to Subpart E, 40 CFR part 763, section 1, Polarized Light Microscopy, incorporated by reference in s. NR 484.04 (28), that, when dry, can be crumbled, pulverized or reduced to powder by hand pressure
 - Nonfriable Asbestos Containing Material: any material containing more than 1% asbestos as determined using the method specified in Appendix E to Subpart E, 40 CFR part 763, section 1, Polarized Light Microscopy, incorporated by reference in s. NR 484.04 (28), that, when dry, cannot be crumbled, pulverized or reduced to powder by hand pressure

ACM Definitions (3 of 3)

- US OSHA 29 CFR 1926.1101 “Asbestos”
 - Asbestos Containing Material: any material containing more than one percent asbestos
 - Presumed Asbestos Containing Material: thermal system insulation and surfacing material found in buildings constructed no later than 1980

Requirement to Inspect

- WI DNR 447.06 (1)
 - ...the **owner or operator** shall, prior to the commencement of the demolition or renovation, thoroughly inspect the affected facility or part of the facility where the demolition or renovation operation will occur for the presence of asbestos...
- US OSHA 26 CFR 1926.1101 (k)(2)(i)
 - ...before work subject to this standard is begun, **building and facility owners** shall determine the presence, location, and quantity of ACM and/or PACM...

Typical Process

- Inspection
 - WI DHS Licensed Inspector
 - Site Work may take Part of a Day to Several Days
 - Laboratory Analysis of Samples Generally Takes a Week
 - Final Reporting (ACMs, Quantities, Diagrams, Recommendations, Certifications)
- Notification
 - WI DHS or WI DNR Must be Notified and Fees Paid
- Abatement
 - ACMs Requiring Removal will be Abated by WI DHS Licensed Workers/Supervisors
 - Clearance at the end of Abatement
- Demolition or Renovation May Begin

EOSH Concerns

- Environmental
 - No Visible Emissions
 - Proper Waste Stream
- Occupational
 - Permissible Exposure Limits
 - Appropriate Controls
 - If there is a reasonable suspicion that there may be asbestos exposure to employees, you must protect your employees or prove there is no exposure

Special Cases

- Point Counting
 - Used to Verify ACM Designation
 - Should not be Used to Avoid ACM Designation
- Joint Compound
 - WI DHS/WI DNR Follow EPA Settlement
 - US OSHA Does Not
- Vermiculite
 - WI DNR Follows EPA Requirements
 - WI DHS Defines Vermiculite as Suspect ACM
 - US OSHA Focuses on the Potential to Exceed the PELs



Questions

02

Lead-Based Paints

Regulations

- WI DHS 163 “Certification for Identification, Removal, and Reduction of Lead Based Paint”
 - Licensing Requirements
 - Lead Safe Renovator Guidelines and Requirements
 - WI Renovate Right Enforcement
- US OSHA 29 CFR 1926.62 “Lead”
 - Worker Protection
- And Others

Lead-Based Paint Definition

- WI DHS Definitions

- Lead Based Paint: paint or any other surface coating materials containing more than 0.5% lead by weight ... or more than 1.0 milligrams lead per square centimeter in the dried film of applied paint
- Child Occupied Facilities: a building or portion of a building constructed prior to 1978, and including common areas, that meets any of the following:
 - A facility licensed or certified to provide day care services
 - A public or private school or preschool attended by a registered child younger than 6 years of age, including a state-operated residential treatment center
 - A building or portion of a building, visited by the same child under 6 years of age, on at least 2 different days within any week, Sunday through Saturday, provided that each day's visit lasts at least 3 hours and combined annual visits last at least 60 hours

Weight vs Surface Area

- Surface Area Testing (XRF)

Layer 1	Layer 2	Results
1.0 cm ²	1.0 cm ²	1.0 cm ²
0.6 mg	0.6 mg	1.2 mg
0.6 mg/cm²	0.6 mg/cm²	1.2 mg/cm²

- Weight Testing (Paint Chip)

Layer 1	Layer 2	Results
1 g paint	1 g paint	2 g paint
4 mg lead	4 mg lead	8 mg lead
0.4 %	0.4%	0.4%

Requirement to Inspect

- WI DHS 163.01 (2)
 - ...this chapter is intended to ensure that persons who perform renovation, lead hazard reduction or lead investigation activities do so safely to prevent exposure of building occupants to hazardous levels of lead. This is accomplished by requiring an individual to be trained and certified under s. DHS 163.10 before the individual performs, supervises or offers to perform or supervise renovation, specified lead hazard reduction or lead investigation activities involving target housing or a child-occupied facility or the real property on which the target housing or child-occupied facility stands...
 - Responsibility is on the Contractor

Typical Process (Renovation Rule)

- Inspection
 - WI DHS Licensed Inspector
 - Site Work may take Part of a Day to Several Days
 - Results are Immediately Available
 - Final Report (LBP, Quantities, Diagrams, Recommendations, Certifications)
- Lead Safe Renovation
 - LBPs Requiring Removal will be Abated or Renovation/Demolition will Begin
 - Clearance at the end of Abatement or Renovation

EOSH Concerns

- Environmental
 - Recycling Banned
 - Salvaging Banned
- Occupational
 - Permissible Exposure Limits
 - Appropriate Controls
 - If there is a reasonable suspicion that there may be asbestos exposure to employees, you must protect your employees or prove there is no exposure



Questions

03

Miscellaneous Hazardous Materials

Examples

- Refrigerants and Halons (CFC HCFC)
 - Air Conditioners, Refrigerators, Dehumidifiers, Water Fountains/Coolers, Extinguishers
- Mercury
 - Thermostats, Aquastats, Pressurestats, Pneumatic Controls, Lighting, Limit Switches
- PCBs
 - Transformers, Capacitors, Ballasts, Door Closers, Caulking, Specialty Paints
- Others
 - Appliances, Batteries, Exit Signs (Tritium), Hazardous Wastes, Oil, Smoke Detectors

Typical Process

- Visual Identification
- Removed by Competent Contractor Prior to Disturbance
- WI DNR WA-651 “Planning your Demolition or Renovation Project: A Guide to Hazard Evaluation, Recycling, and Waste Disposal”



Questions

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Further Information

Further Information

- This Presentation and Supporting Documents are Available at <https://legend-group.com/whea>
- Call w/ Questions:
 - Bill McNierney: 715.571.2569
 - Cameron McNierney: 715.828.1324

Thank You for Your Time

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