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Asbestos in the Construction Industries

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Disclaimer

This information is intended to assist employers, workers, and others as they strive to improve workplace health and safety. While we attempt to thoroughly address specific topics, it is not possible to include discussion of everything necessary to ensure a healthy and safe working environment in a presentation of this nature. Thus, this information must be understood as a tool for addressing workplace hazards, rather than an exhaustive statement of an employer's legal obligations, which are defined by statute, regulations, and standards. Likewise, to the extent that this information references practices or procedures that may enhance health or safety, but which are not required by a statute, regulation, or standard, it cannot, and does not, create additional legal obligations. Finally, over time, OSHA may modify rules and interpretations in light of new technology, information, or circumstances; to keep apprised of such developments, or to review information on a wide range of occupational safety and health topics, you can visit OSHA's website at www.osha.gov.

Goals



- Asbestos Overview
- Explain how asbestos should be addressed during demolition phases of projects
- Lay out the responsibilities of different parties that are identified in OSHA standards
- Explain the information you should be provided when working on these projects

Asbestos in Southeastern Pennsylvania

- The US Geological Survey identified 4 active amphibole mines in Southeastern Pennsylvania. The mines were located in Montgomery and Delaware Counties through the 1960s.
 - 3092 Pennsylvanians died between 1999 to 2017 due to Asbestos related Mesothelioma. Another 568 died from Asbestosis.
 - Nearly 20% of all Mesothelioma claims were filed in Pennsylvania.
- Industries in Southeastern PA routinely used asbestos as a regular part of their processes.
 - Shipbuilding
 - Oil Refineries
 - Shipyards
 - Steel Manufacturing

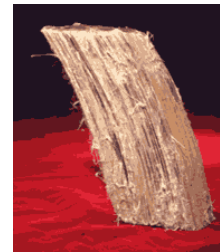


In December of 2011, due to falling demand, the Black Lake operation, the last asbestos mine in Canada, closed its doors. Nearly 300 workers lost their jobs as a result.

Source- Narratively.com

Asbestos

- Naturally occurring in certain rock formations
- 6 Types in 2 Groups:
 - Serpentine
 - Chrysotile (White) (95%)
 - Amphibole
 - Amosite (Brown)
 - Crocydolite (Blue)
 - Anthophyllite
 - Actinolite
 - Tremolite



Why did we use it?

Asbestos' resistance to chemicals, heat, water and electricity made it an excellent insulator for the steam engines, turbines, boilers, ovens and electrical generators that powered the Industrial Revolution. The malleable properties of asbestos made it an important building, binding and strengthening commodity.



Where is it found?

- Sprayed-on fire proofing & building insulation
- Insulation for pipes & boilers
- Wall & ceiling insulation
- Ceiling tiles
- Floor tiles
- Putties, caulks, & cements
- Roofing shingles
- Siding shingles
- Wall & ceiling texture in older buildings
- Joint compound in older buildings
- Brake linings & clutch pads
- Electrical wiring & cabinets
- Paints



Asbestos-containing materials cannot be differentiated by visual means. They must be analyzed by a laboratory test.



Asbestos is most hazardous when friable.
The term "friable" means that the asbestos
is easily crumbled by hand pressure



Water damage, continual vibration, aging, & physical impact such as drilling, grinding, buffing, cutting, sawing, or striking can break the materials down making fiber-release more likely.

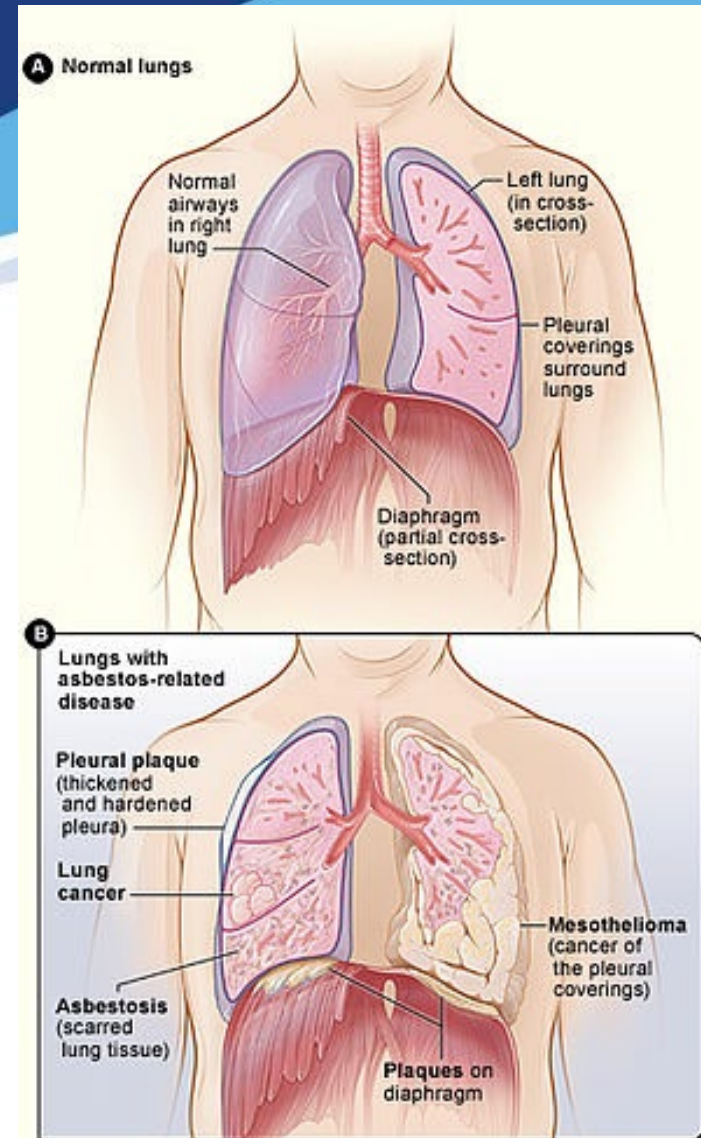
Asbestos-Related Diseases

Asbestosis – scarring in the lungs

Pleural Disease – non-cancerous lung condition that causes changes in the pleural.

Lung cancer - malignant tumor that invades and blocks the lung's air passages.

Mesothelioma - rare cancer of the membrane that covers the lungs and chest cavity (pleura), or the (peritoneum), or membranes surrounding other internal organs.



29 CFR 1926.1101

OSHA's Asbestos Standard for the Construction Industry

- Includes but is not limited to the following where asbestos is present:
 - Demolition or salvage of structures
 - Removal or encapsulation of materials
 - Construction, alteration, repair, maintenance, or renovation
 - Installation of products containing asbestos
 - Spill/emergency clean-up
 - Transportation, disposal, storage, containment and housekeeping activities on the site where construction activities are performed
- Excludes asphalt roof coatings, cements, mastics



29 CFR 1926.1101 Definitions

- Asbestos Containing Materials (ACM) – Any materials containing more than 1% asbestos.
- Fiber – Particulate form of asbestos, 5 micrometers or longer, with a length-to-diameter ratio of at least 3 to 1.
- Surfacing material - material that is sprayed, troweled-on or otherwise applied to other surfaces.
- Thermal system insulation (TSI) - ACM applied to pipes, fittings, boilers, breeching, tanks, ducts or other structural components to prevent heat loss or gain.

29 CFR 1926.1101



- Class I Asbestos Work: activities involving the removal of TSI or surfacing ACM and PACM
- Class II Asbestos Work: activities involving the removal of ACM which is not TSI or surfacing material. Examples: removal of asbestos-containing wallboard, floor tile, and roofing shingles
- Class III Asbestos Work: repair and maintenance operations where ACM and/or PACM is likely to be disturbed
- Class IV Asbestos Work: maintenance and custodial activities during which employees contact but do not disturb ACM or PACM and activities to clean up dust, waste and debris resulting from Class I, II, and III activities

29 CFR 1926.1101

(k) Communication of Hazards – Duties of Building and Facility Owners

- **Before work is begun, *identify the presence, location, and quantity* of ACM/PACM, including**
 - **All TSI and sprayed on/troweled-on surfacing materials in buildings or substrates constructed no later than 1980**
 - **All resilient flooring material installed not later than 1980**



29 CFR 1926.1101

(k) Communication of Hazards – Duties of Building and Facility Owners

- Notify the following persons of the presence, location, and quantity of ACM/PACM
 - Prospective employers applying for/bidding for work
 - Employees of the owner who will work in or adjacent to areas containing such materials
 - *All employers on multi-employer worksites whose employees will be performing work within or adjacent to areas containing such materials*
 - Tenants who will occupy areas containing such materials



29 CFR 1926.1101

(k) Communication of Hazards – Duties of Building and Facility Owners

- Post signs at entrance to mechanical rooms/areas which employees may reasonably be expected to enter and which contain ACM and/or PACM
- Identify material present, its location, work practices to avoid disturbance
- Post signs or labels on previously installed ACM/PACM to inform employees of which materials are affected

Warning Signs & Labels



Signs in areas of
ACM/PACM to inform
employees and asbestos
workers



Labels affixed to products
containing asbestos

29 CFR 1926.1101

(k) Communication of Hazards – Duties of Employers

- Before work, identify the presence, location, and quantity of ACM/PACM
- Before work, inform the following persons of the location and quantity of ACM/PACM and the precautions to be taken to confine airborne asbestos
 - Owners of the building/facility
 - Employees who will perform work and employers of employees who work and/or will be working in adjacent areas



29 CFR 1926.1101

(d) Multi-Employer Worksites

- An employer whose work requires a regulated area shall inform other employers of
 - Nature of such work
 - Existence of and requirements pertaining to regulated areas
 - Measures taken to ensure that employees of other employers are not exposed

29 CFR 1926.1101

(d) Multi-Employer Worksites (cont'd)

- All employers of employees exposed shall comply with applicable protective provisions
- All employers of employees working adjacent to regulated areas established by another employer, shall daily ascertain integrity of the enclosure and/or other controls
- All general contractors shall be deemed to exercise general supervisory authority over work covered by this standard and shall ascertain that the asbestos contractor is in compliance



29 CFR 1926.1101

(k) Communication of Hazards – Duties of Employers (again)

- Within 10 days of completion, inform the building/facility owner and employers of employees who will be working in the area of
 - Current location and quantity of ACM/PACM remaining
 - Final monitoring results, if any
- Within 24 hours of discovering ACM/PACM on a worksite, convey presence, location, and quantity of such newly-discovered materials to
 - Owner
 - Other employers of employees working at the worksite
- Post signs or labels on previously installed ACM/PACM to inform employees of which materials are affected



29 CFR 1926.1101

(k) Communication of Hazards – Criteria to Rebut the Designation of PACM

- An employer or owner may demonstrate that PACM does not contain asbestos by the following:
 - Having an AHERA inspection
 - Performing tests that demonstrate that the material is not ACM
 - > Collection of bulk samples following requirements of 40 CFR 763.86
 - > Performed by an accredited inspector or CIH
 - > Analysis of samples by persons/laboratories participating in nationally-recognized testing programs or round robin testing program
 - > For flooring materials, a determination by an IH based on recognized analytical techniques
- Data and information must be maintained for as long as they are relied on to rebut the presumption

1926.1101(k)(9)(i)

- The employer shall train each employee who is likely to be exposed in excess of a PEL
- Each employee who performs Class I through IV asbestos operations, in accordance with the requirements of this section.
- Such training shall be conducted at no cost to the employee. The employer shall institute a training program and ensure employee participation in the program.

1926.1101(o) Competent Person

- 1926.1101(o)(1) *General*. On all construction worksites covered by this standard, the employer shall designate a competent person, having the qualifications and authorities for ensuring worker safety and health required by subpart C, General Safety and Health Provisions for Construction (29 CFR 1926.20 through 1926.32).
- 1926.1101(o)(2) *Required Inspections by the Competent Person*. Section 1926.20(b)(2) which requires health and safety prevention programs to provide for frequent and regular inspections of the job sites, materials, and equipment to be made by competent persons, is incorporated.

Asbestos Surveys



Flavors-

- Management Survey- No samples
- Screening- Samples damaged PACM
- Limited- Samples what the owner wants
- Construction/Renovation- scope of work
- Pre-Demolition- comprehensive



Asbestos Survey Reports



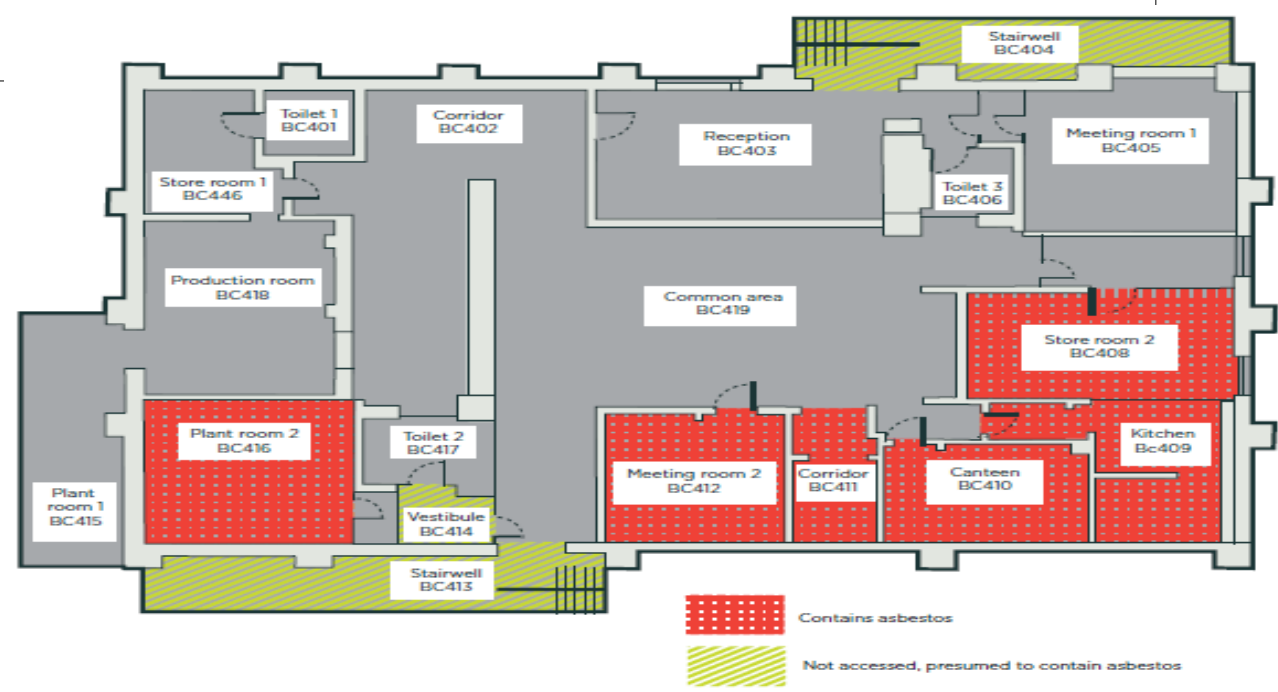
Complete Document from the Company

- Introduction- What was requested
- Summary- What was done & found (strategy)
- Tabular Data-Where, What, Condition, Recommendation.
- Regulatory Information- EPA, OSHA, State..
- Appendices- Lab Certs., Sample sheets, Lab results...

Date Samples Received: **May 09, 2015**
 Method: **EPA 600/R-93/116 - Short Report, Bulk**
 Turnaround: **24 Hour**
 Date Samples Analyzed: **May 09, 2015**

ND=None Detected
 TR=Trace, <1% Visual Estimate
 Trem/Act=Tremolite/Actinolite

Client Sample Number	Lab ID Number	L A Y E R	Physical Description	Sub Part (%)	Asbestos Content		Non Asbestos Fibrous Components (%)	Non-Fibrous Components (%)
					Mineral	Visual Estimate (%)		
#1 E	EM 1401808	A	Brown mastic	TR		ND	TR	100
		B	Brown/multi-colored sheet vinyl w/ gray/multi-colored fibrous backing material	100		ND	35	65
#1 B	EM 1401809	A	Brown mastic	TR		ND	0	100
		B	Beige mastic	2		ND	TR	100
		C	Tan/multi-colored sheet vinyl w/ gray/multi-colored fibrous backing material	98		ND	35	65
#3 K	EM 1401810	A	Yellow mastic	2		ND	TR	100
		B	Black mastic	8		ND	TR	100
		C	Tan/black floor tile	90	Chrysotile	8	0	92



ACM MATERIALS LISTING

Space I.D.	Space Name	ACM Material	HSA #	Approx. Quantity
Ground Floor				
Entire ground floor with suspended ceilings (offices, open spaces, storage, meeting rooms, toilets, lobby, staff lounge, work rooms)		Sprayed-On Fireproofing (encapsulated residual, loose debris above suspended ceilings)	A-24	11,313 SF
		Pipe elbow insulation	A-35	Not quantified
1001	Garage Bay	Pipe elbow insulation	A-35/16	29 Elbows
		Fire door (metal) – rear exit	A-47	32 SF
1002	Garage Bay	Pipe elbow insulation	A-35/16	6 Elbows
		Fire door (wood)	A-46	28 SF
1002A	Garage Entry – at stairwell entry	Sprayed-On Fireproofing above solid plaster ceiling (intact)	A-24	10 SF
		Fire door (metal) – exit	A-47	28 SF
1003	Janitor	Pipe elbow insulation	A-35/16	2 Large elbows
		Linoleum	A-43	180 SF
		Sprayed-On Fireproofing, encapsulated residual on portion of space with "I" beams	A-24	50 SF
1004	Rear Stairwell	Fire Doors (2 doors)	A-46	56 SF
1006	Duct/Pipe Shaft	Sprayed-On Fireproofing un-encapsulated debris	A-24	36 SF

Other Guidance- NESHAP

EPA asbestos guidance:

Will a demolition method make ACM friable?

- [Asbestos/NESHAP Regulated Asbestos Containing Materials Guidance EPA 340-1-90-018](#)
- [A Guide to Normal Demolition Practices Under the Asbestos NESHAP EPA 340-1-92-013](#)
- [How EPA's Asbestos Regulations Apply to Residential Buildings Used for Fire Training](#)
- [How EPA's Asbestos Regulations Apply to Municipal Demolition Activities](#)
- [Discovery of Asbestos After Demolition is Underway](#)
- [Protect Your Family from Asbestos-Contaminated Vermiculite Insulation](#)
- [Correspondence about Applicability of Asbestos NESHAP](#)





www.osha.gov

800-321-OSHA (6742)