

Regulatory Compliance and Management of Asbestos Containing Materials

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Introduction

Asbestos is the name given to a group of 6 naturally occurring minerals including amonite, actinolite, anthophyllite, chrysotile, crocidolite and tremolite. It has been widely used to create industrial products due to its high tensile strength, flexibility, resistance to chemical and thermal degradation, and electrical resistance. The word “asbestos” is a derivative of the Greek word *asbestonon*, meaning “unquenchable”.¹

This paper intends to provide basic information about asbestos related diseases and offer some guidance in navigating the regulatory maze associated with managing asbestos containing building materials. Prior to beginning any activities involving inspection, disturbance or handling of any known or suspected asbestos containing materials, one should consult with a reputable and qualified asbestos management consultant.

US Banned Substances

In the US, under the Toxic Substance Control Act (TSCA), certain asbestos containing products are banned from use, manufacture, importation, processing and distribution. These include corrugated paper, roll board, commercial paper, specialty paper and flooring felt. The regulation goes further to ban “new uses” of asbestos products as well.

Under the Clean Air Act (CAA) pre-formed asbestos pipe and block insulation, spray applied asbestos containing materials (greater than 1%) except under certain conditions as specified by the USEPA under 40 CFR 61, Subpart M are banned.

Products not banned in the US include cement corrugated and flat sheets; clothing; pipe wrap; roofing felt; vinyl floor tile; cement shingles and pipe; millboard; automotive transmission components and clutch facings; friction materials; brake components; gaskets; roof and non-roof coatings.²

Health Effects

Exposure to asbestos occurs when the fibers are released and inhaled into the lungs. The majority of the fibers that are inhaled will be expelled but others may become lodged permanently in the lungs. When this occurs, scarring may develop around the lodged fiber. Over time, this scarring may become widespread and cause the individual to develop breathing problems. This condition is referred to as “asbestosis” and it tends to develop 10 – 20 years after initial exposure. Exposure to asbestos can also cause lung cancer and changes to the pleural lining of the chest.³

Mesothelioma, a rare cancer of the membranes and lining of the chest and abdomen is also related to asbestos exposure. Some studies indicate a correlation between asbestos exposure and other cancers such as gastrointestinal and colorectal. However this is not conclusive.⁴

According to the World Health Organization (WHO), about 125 million people in the world are exposed to asbestos at the workplace and it is estimated that more than 107 000 people die each year from asbestos-related diseases. WHO further estimates that one in every three deaths from occupational cancer may be caused by asbestos with an addition several thousand deaths each year caused by exposure to asbestos in the home.⁵

Regulatory Control

Asbestos products have been used for centuries around the world and are still manufactured today in certain countries. Due to the health effects associated with exposure, most products are now banned from use in the US and removal of existing products is highly regulated. As an employer or building owner, understanding these regulations can be very difficult because they are often confusing.

In addition to federal OSHA and USEPA standards, most states have established their own rules for abatement, management and disposal. In some cases, individual cities such as New York City and Philadelphia have their own licensing requirements for professionals involved in inspection, abatement and air monitoring.

US Environmental Protection Agency

In addition to banning certain asbestos containing products, the USEPA has promulgated several regulatory acts associated with the control of asbestos containing materials. These regulations are focused on the protection of the environment and public health.

The USEPA’s National Emission Standard for Hazardous Air Pollutants (NESHAPS) for asbestos (40 CFR 61 Subpart M) sets out to minimize fiber release and exposure during the handling of asbestos containing materials. Included in the NESHAPS rule is the definition of “Friable” and “Non-Friable” asbestos containing materials.

The standout rule under NESHAPs is no visible emissions and the requirement for wet methods when handling or disturbing asbestos containing materials.

Under the rule, Friable Asbestos Material means any material containing more than 1% asbestos that when dry can be pulverized, crumbled or reduced to powder by hand pressure. Non-

Friable Asbestos Material is defined as any material containing more than 1% asbestos that when dry can NOT be pulverized, crumbled or reduced to power by hand pressure. The rule goes further to categorize non-friable asbestos materials into the following categories: Category I non friable asbestos containing material (ACM) means asbestos containing packing, gaskets, resilient floor covering and asphaltic roofing products containing more than 1 percent asbestos. Category II non-friable asbestos containing material (ACM) means any materials, excluding Category I non-friable ACM, containing more than 1 percent asbestos. *“Regulated Asbestos Containing Material (RACM) means (a) Friable asbestos material, (b) Category I non-friable ACM that has become friable, (c) Category I non-friable ACM that will be or has been subject to sanding, grinding, cutting or abrading, or (d) Category II Non-friable ACM that has a high probability of becoming or has become crumbled, pulverized, or reduced to power by the forces expected to act on the material in the course of demolition or renovation operations...”*

The NESHAPs rule specifically sets standards for asbestos mills (61.142), roadway construction (61.143), asbestos manufacture (61.144) and demolition and renovation activities (61.145).

The Standard for Demolition and Renovation Activities applies to the owner or operator or a demolition or renovation activity and sets forth a requirement for that party to “thoroughly inspect” the facility for the presence of asbestos, including Category I & II non-friable ACM prior to beginning work. The standard further requires the owner or operator of the activity to notify the USEPA in writing at least 10 business days prior to beginning any demolition work and/or any asbestos abatement work that includes the removal of at least 260 lf and/or 160 sf of RACM. It is important to understand that many state agencies have similar but more stringent notification requirements in addition to those required by NESHAPs.

The Asbestos Hazard Emergency Response Act (AHERA) (Toxic Substances Control Act TSCA II) required the USEPA to promulgate rules for school agencies and authorities (Local Education Authorities or LEAs) to identify and manage asbestos containing building materials in schools K-12. AHERA also required the USEPA to set standards and accreditation for individuals involved in identification, management and abatement activities.

In response to AHERA, the USEPA promulgated the Asbestos-Containing Materials in Schools Rule (40 CFR 763 Subpart E). This rule requires LEAs to develop management plans and response actions to reduce asbestos exposure. Standards for inspection, identification and assessment of asbestos containing materials in schools were also developed by the USEPA. The methods outlined in 40 CFR 763.86, commonly referred to as “AHERA Methods”, dictate sampling and analytical methods to accurately determine the presence of ACM and are considered best practices for all types of inspection and assessment work.

Under 763 Subpart G, the Asbestos Worker Protection Rule, the USEPA extends worker protection rights for state and local authorities not previously covered under other requirements of OSHA.⁶

Occupational Safety and Health Administration

Federal OSHA has a long history of attempting to regulate employee exposure beginning in 1971. Early regulations actually excluded construction work. Today, there are similar standards for Construction (1926.1101) and General Industry (1910.1001) and Maritime (1915.1001).

(Maritime requirements will not be reviewed in this paper.) All of which define Asbestos Containing Materials (ACM) as any material containing more than 1% asbestos. Presumed Asbestos Containing Material (PACM) is essentially suspect material that has not been tested. The Permissible Exposure Limit (PEL) for asbestos is .1 fibers/cubic centimeter. Sampling and analytical methods for exposure assessments and monitoring is included in Appendix A (OSHA Reference Manual) of each applicable standard for Maritime, General Industry and Construction.

Construction and Abatement Standards

The construction standard outlines requirements for demolition and salvage activities that may disturb ACM; Removal, encapsulation, construction, repair, maintenance and renovation of building components that contain asbestos; Installation of asbestos products and emergency cleanup.

The construction standard classifies work activities as follows:

- *Class I asbestos work* means activities involving the removal of TSI* and surfacing** ACM and PACM.
 - *Class II asbestos work* means activities involving the removal of ACM which is not thermal system insulation or surfacing material. This includes, but is not limited to, the removal of asbestos-containing wallboard, floor tile and sheeting, roofing and siding shingles, and construction mastics.
 - *Class III asbestos work* means repair and maintenance operations, where "ACM", including TSI and surfacing ACM and PACM, is likely to be disturbed.
 - *Class IV asbestos work* means 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.
- * Thermal System Insulation (TSI) means ACM applied to pipes, fittings, boilers, breeching, tanks, ducts or other structural components to prevent heat loss or gain.
- ** *Surfacing material* means material that is sprayed, troweled-on or otherwise applied to surfaces (such as acoustical plaster on ceilings and fireproofing materials on structural members, or other materials on surfaces for acoustical, fireproofing, and other purposes).⁷

It should be understood that these "Classes" were established specifically for worker protection only. Most states have established more stringent rules for abatement activity that are designed to protect abatement workers as well as the general public and environment. Basic work practices and training requirements are included in 1926.1101, but specific methods for erecting containment structures and training/certifying abatement workers is often addressed by state regulation.

Prior to beginning any abatement action, one should retain the services of reputable Asbestos Management Consultant licensed and/or certified as needed in the state where the abatement will take place. Most consultants are capable of completing a thorough asbestos survey prior to beginning work, design the project and conduct periodic and clearance air monitoring. For abatement work in schools K-12, hiring a licensed consultant is generally required.

For general abatement activities, an asbestos supervisor will be assigned to each project. The Asbestos Supervisor is the competent person required by 29 CFR Part 1926.1101 and the

supervisor required by 40 CFR Part 763 Subpart E and shall have attended a training course which meets the criteria of the USEPA's Model Accreditation Program. The asbestos supervisor will usually need to hold a current asbestos contractor/supervisor license for the state where the work is taking place. Refresher training will be received once every twelve months.

The asbestos supervisor oversees and is present for all phases of asbestos abatement operations. The asbestos supervisor ensures that all abatement personnel use proper personal protective equipment and perform work safely and in accordance with all applicable regulations.

All areas where asbestos removal is taking place will be isolated from non-asbestos work areas to prevent entry by unauthorized personnel. Once isolated, these areas will be referred to as regulated areas. Isolation methods will vary depending on the type of work being performed. As a minimum, regulated areas will be delineated with barricade tape and warning signs that include information similar to that listed below:

DANGER
ASBESTOS
CANCER AND LUNG DISEASE HAZARD
AUTHORIZED PERSONNEL ONLY
RESPIRATORS AND PROTECTIVE CLOTHING
ARE REQUIRED IN THIS AREA

Specific requirements for signage is included in 29 CFR 1926.1101(k)(7). Whenever necessary, warning signs shall be displayed in Spanish or any other language other than English.

More elaborate isolation methods may consist of physical barriers constructed of plywood and/or polyethylene sheeting depending on state laws, occupancy of the building and the type of material being removed.

For work involving the removal of more than 25 linear feet or 10 square feet of thermal system insulation or surfacing material (Class I work), a full, three stage decontamination unit must be established. Local or individual state regulations may require the use of such a unit for Class I work regardless of the quantities. Personal decontamination units need to be constructed in compliance with 29 CFR 1926.1101(j) and local regulations. Where there is a conflict in requirements of local regulations, the more stringent shall apply. The three stage unit shall consist of a Clean Room, Shower Room and Equipment/Dirty Room. The decontamination unit should consist of the following:

- (A) CLEAN ROOM; the entrance to the Clean Room shall consist of a triple flapped six mil polyethylene doorway. The Clean Room shall be used to store clean personal protective equipment (PPE) and worker's street clothes. The Clean Room shall be equipped with adequate space to allow for separate storage of street clothes and PPE. Workers shall use the Clean Room protective clothing when entering the regulated area and dress in their street clothes after exiting from the shower. No contaminated equipment or articles of clothing may enter this room.
- (B) SHOWER ROOM; The Shower Room shall be connected directly to the Clean Room, separated by a triple flapped six mil polyethylene doorway. Workers entering the work area or Exclusion Zone will pass through the Shower Room after donning PPE. Workers

exiting the regulated area will enter the Shower Room after having removed all contaminated clothing, except respirators, and clean themselves. Workers shall remove respirators in the shower with the water running. Each shower will be supplied with hot and cold water adjustable at the tap, liquid soap, shampoo and a drain equipped with a filtration system to filter asbestos from the shower waste water to a fiber size of five microns. The Shower Room will contain one shower for every eight asbestos workers on site.

- (C) EQUIPMENT (DIRTY) ROOM; The Equipment Room shall be connected directly to the Shower Room, separated by a triple flapped six mil polyethylene doorway. All workers will pass through the Equipment Room to enter the regulated area. Workers exiting the work area shall remove all contaminated clothing in the Equipment Room and dispose of it in a labeled asbestos waste bag and proceed to the Shower Room wearing only their respirators. The equipment room shall be used to store contaminated equipment only.

Less elaborate forms of decontamination facilities, such as the use of a decontamination area, may be utilized while performing Class II, III or IV work.

General Industry Standards

The OSHA general industry standard applies to all occupational asbestos exposure except construction or employment related to ship building (maritime). The requirements for all three standards overlap and cross reference to some extent particularly with regard to respiratory protection and air sampling methods.

The general industry standard provides definitions of Asbestos Containing Material (ACM) as any material containing more than 1% asbestos and Presumed Asbestos Containing Material (PACM) which “*means thermal system insulation and surfacing material found in buildings constructed no later than 1980*” (1910.1001 (b)).

The most distinctive part of the general industry standard falls under 1910.1001(j), Hazard Communication. Specifically, the standard requires “*building and facility owners to determine the presence, location and quantity of ACM and/or PACM at the work site*” (1910.1001 (j)(3)(I)).

Information about the location and amount of ACM and PACM must inform employers residing at the building and/or facility who in turn must include the information in their Hazard Communication Program.

The owner or employer can demonstrate that PACM does not contain asbestos by:

1910.1001 (j)(8)(ii)(A)

Having a completed inspection conducted pursuant to the requirements of AHERA (40 CFR 763, Subpart E) which demonstrates that no ACM is present in the material; or

1910.1001(j)(8)(ii)(B)

Performing tests of the material containing PACM, which demonstrate that no ACM is present in the material. Such tests shall include analysis of bulk samples collected in the manner described in 40 CFR 763.86. The tests, evaluation and sample collection shall be conducted by an accredited inspector or by a CIH. Analysis of samples shall be performed by persons or laboratories with proficiency demonstrated by current successful participation in a nationally recognized testing program such as the National Voluntary

Laboratory Accreditation Program (NVLAP) or the National Institute for Standards and Technology (NIST) or the Round Robin for bulk samples administered by the American Industrial Hygiene Association (AIHA) or an equivalent nationally-recognized round robin testing program.

There are additional provisions for signage that are similar to those included in the construction standard and there is also a requirement for labeling.

Respiratory Protection and Medical Surveillance

Where employees must wear respirators for protection against exposure to asbestos, the employer must create a written respiratory protection program in accordance with All work requiring respiratory protection is covered under 29 CFR 1910.134.

Specifically, for asbestos work, the employer must provide employees with a Powered Air Purifying Respirator (PAPR) in place of a negative pressure respirator at the employee's request (provided that the PAPR provides adequate protection).

Medical Surveillance is covered under 1910.1001(l) and 1926.1101(m). Each standard requires employers to provide affected employees with initial and follow up medical examinations.

Summation

There are far too many regulatory requirements associated with asbestos management than can be listed here. State regulations are often more far reaching the federal guidelines and failure to comply can result in monetary fines.

For more information about regulatory standards associated with asbestos, consult with a qualified consultant or call your local OSHA office.

¹ Asbestos Revisited by James E. Allen and Brooke T. Mossman

² USEPA, US Bans on Asbestos website <http://www.epa.gov/asbestos/federalbans.html>

³ Agency for Toxic Substances & Disease Registry, Centers for Disease Control website http://www.atsdr.cdc.gov/asbestos/asbestos/health_effects/

⁴ National Cancer Institute, Asbestos Fact Sheet <http://www.cancer.gov/cancertopics/factsheet/Risk/asbestos>

⁵ World Health Organization Fact Sheet <http://www.who.int/mediacentre/factsheets/fs343/en/index.html>

⁶ USEPA website <http://www.epa.gov/asbestos/lawsregs.html>

⁷ OSHA 29 CFR 1926.1101(b)