Asbestos Assessment and Control

Asbestos has been widely used in the construction industry and can be found in insulation, friction materials, textiles, and building products.

General

Asbestos is the name of a group of fibrous natural minerals mined all over the world. This group consists of chrysotile (white asbestos), actinolite, amosite (brown asbestos), crocidolite (blue asbestos), anthophyllite, and tremolite.

Asbestos has been widely used in the construction industry and can be found in insulation, friction materials, textiles, and building products. Due to its wide range of physical properties and uses, it was considered the "Miracle Fiber." It was commonly used in fire retardant insulation on beams, fire walls and doors until 1973, in mechanical insulation on pipes, ducts and boilers until 1975, and in acoustical and decorative insulation on ceilings and walls, until 1978.

Exposure to high levels of asbestos has been linked to a progressive lung disease known as Asbestosis. Lower levels of exposure have been linked to mesothelioma (a rare cancer of the lining of the chest and abdominal region) and cancers of the lung, esophagus, stomach, colon, and other tissues.

An adverse exposure exists if asbestos-containing materials are present and the asbestos has or potentially will become airborne.

Asbestos Exposure Assessment

The U.S. Environmental Protection Agency has established eight major considerations in assessing potential exposure to hazardous levels of asbestos They are:

1. Friability/Potential Friability
2. Condition of the Material
3. Exposed Surface Area
4. Air Plenum or Direct Air Stream
5. Accessibility
6. Activity and Movement
7. Water Damage
8. Asbestos Content

Condition of the material, structural characteristics of the building, concentration and type of asbestos, building occupancy, and human accessibility are the significant factors in evaluating potential exposure.

- Friability: If the material can be crumbled or reduced to powder by hand pressure, it is considered friable. The more friable the material is, the greater the potential or contamination.
- Condition of material: The condition depends upon how well it was installed

initially, how strongly it is adhering to the underlying surface, how much it has deteriorated, and whether it has been vandalized or damaged.

- Exposed surface area: Exposed surface area has a definite effect on potential fallout, contact, and damage. Areas with louvers, grids, or other open ceiling systems should be considered exposed.
- Air plenum or direct air stream: Asbestos material within air plenum must be considered in the assessment because of contact or damage due to maintenance, renovations, or erosion from air streams.
- Accessibility: If the asbestos is subject to accidental or intentional contact, it should be considered accessible. The proximity of the friable material to heating, ventilating, lighting, electrical, communication, and plumbing systems requiring maintenance or repair also indicates accessibility.
- Activity or movement: These causes include air movement, building vibration from machinery/ overhead floors, or any other source, and activity levels of building occupants.
- Water damage: Water can disturb and transport asbestos fibers to other areas. Upon evaporation, asbestos residue will remain.
- Asbestos content: While all asbestos materials present an exposure potential, those with a high percentage of asbestos are the most dangerous. Existing air concentrations should be measured using transmission electron microscopy (TEM) and should be included as a major consideration in any assessment.

Special Note:

A specially appointed task force has concluded that there is no identifiable safe level of asbestos exposure. The EPA and the scientific community believe that any exposure to asbestos involves some health risk and it is impossible to confidently estimate the exact degree of risk associated with low-level exposures.

Asbestos Exposure Control

If exposure to asbestos material is occurring or likely to occur, corrective action should be considered. The action taken should be the most efficient long-term solution.

There are five approaches that can be used separately or in combination to control asbestos exposure. It is generally accepted that since the asbestos material remains within the building following encapsulation, enclosure, and operations and maintenance programs, these three approaches should be considered only as temporary control measures.

- Deferred action: The only advantage is the absence of immediate cash outlays and it is recommended only when there is negligible exposure potential. Should this avenue be pursued, strict procedures must be established to prevent damage during maintenance or renovation. It is necessary to have frequent inspections and reassessments of the affected area.
- Encapsulation: Encapsulation involves the use of anEPA-tested sealant that is sprayed onto the asbestoscontaining material. Encapsulants can either “penetrate” or “bridge” the affected surface. Fiber release is usually

controlled in a rapid and economical fashion; however, the asbestos source remains. Encapsulation is appropriate only when the following occurs:

1. Removal is not feasible
2. Material has retained bonding integrity
3. Material is inaccessible
4. Material damage is not likely
5. Complex surface exists
6. Time is of the essence
7. Asbestos materials are not more than 1 (one) inch thick

Complication can occur when the asbestos material does not adhere well to the underlying substrate and is deteriorating, or when its cohesive properties have diminished. It is necessary to have frequent inspections and reassessments of the affected areas. Keep in mind, the asbestos material must support the added weight of the encapsulant. Previously encapsulated materials may be difficult to remove in compliance with EPA regulations.

- Enclosure. Enclosure is the construction of a barrier between the asbestos and the surrounding environment. Fiber release is usually controlled in a rapid and economical fashion; however, the asbestos source remains. Fibers will continue to fall out behind the enclosure, requiring extreme care when disturbing the enclosure. It is necessary to have frequent inspections and reassessments of the affected areas. It is important to note that the same precautions used during removal or encapsulation must be taken during enclosure.
- Operations and maintenance programs. A major area of concern for building owners is the legal implications of asbestos present in buildings. The possibility of an owner being sued for failure to properly abate or contain asbestos is not uncommon. An operations and maintenance program can be a good cost-effective method of reducing employee and/ or public exposure until a complete abatement plan is implemented.
- Removal. Removal is the stripping of the asbestos containing material from its current surface. The asbestos source is eliminated and future problems are precluded from developing. It is usually appropriate for deteriorating, accessible, open, or friable surfaces. The potential for worker exposure is very high if proper procedures are not followed during removal. The removed material must be disposed at an approved disposal site.
- Post-removal encapsulation. Post-removal encapsulation involves the encapsulation of all surfaces where removal has occurred. This assures that any remaining fibers are sealed and reduces the exposure risks. (Particularly beneficial after scraping.)

  When respraying a scraped surface, the building owner should take care in selecting a product that will be compatible with the encapsulant.