

Advances in Asbestos Removal

By Agnes Miczynska

Asbestos is a name given to a group of naturally occurring fibrous minerals. Asbestos has been heavily used in commercial and industrial applications due to its unique properties of being resistant to abrasion, inert to acid and alkaline solutions, and stable at high temperatures. The building and construction industry used asbestos for strengthening cement and plastics. Also, asbestos was used for thermal insulation (vermiculite), fireproofing and sound absorption.

Asbestos is a hazardous material when it becomes friable (able to become airborne). This is measured by its ability to crumble and reduce to powder by hand pressure, such as when it is disturbed or damaged. When asbestos is disturbed or damaged, it releases fibers into the air. Because these fibers are small and light, they can be suspended in the air for long periods. People who live or work near asbestos-related operations have a high chance of inhaling asbestos fibers that have been released into the air by work activities. Once inhaled, the small, inert asbestos fibers can easily penetrate the body's defenses and may cause several health effects such as asbestosis.

Sealing asbestos is one option for owners of buildings containing asbestos and is typically used when removal is not an option as a result of lack of access to the area containing asbestos. This process is quicker and, in the short term, considerably less expensive. However, owners should keep in mind the cost of an asbestos management program, which will have to be implemented if asbestos is sealed. Additional costs also include repairing the sealed area if it becomes damaged and ensuring a "permit to work" program for maintenance staff. In addition, if a building or portions of a building are going to be demolished or renovated at some point, the asbestos will have to be removed prior to such activities.

The cost of asbestos abatement depends on many factors. One important factor is the type of material to be removed. Floor tiles are usually the cheapest while spray over the



plaster material is usually the most expensive of all abatement work. Quantity is also a large factor; big jobs cost less than small ones per square foot due to the mobilization and set-up costs that are required. Other considerations include the type of removal required, number of workers required to complete the job within a given timeframe, the personal protective equipment required to ensure the safety of all workers, time required to complete removal and access to asbestos-containing materials.

Despite the fact that asbestos removal techniques have been relatively unchanged for several years, there have been some advances in the use of new equipment to cut the costs of removing asbestos, as manual removal is very time consuming. For example, the use of a high pressure vacuum system equipped with a high efficiency particulate air (HEPA) filter has several benefits over manual removal. This equipment is an integrated trailer-mounted system comprised of a diesel-engine-powered vacuum, a cyclone separator and a HEPA filter. During operation, the vacuum hose is brought into the enclosure around the exposed building asbestos-containing material and the powerful vacuum shreds and cuts the material, drywall joints compound, plaster, etc. The shredded asbestos-containing material is drawn first into the cyclone separator where it is sprayed with water as it enters the unit. The wet material begins to clump as it spins at high speed in the cyclone separator. The waste is periodically removed from the separator by activating a bypass discharge valve that releases it directly into a plastic waste

disposal bag. Collected materials may be single-, double-, bulk-bagged or barreled as mandated by governing agencies.

The unit cost of removing asbestos using this equipment versus manual removal is considerably less given the appropriate circumstances. Costs include mobilization, direct costs associated with removal, waste disposal, demobilization and personal protective equipment (PPE). The technology has fixed mobilization and demobilization costs that manual removal does not and PPE is essentially the same for both methods. The cost savings come from a reduction in manual labour (time required to complete removal) as well as a reduction in waste disposal. Because the technology is able to remove and bag contaminated material at the same time and at a faster rate, the time required to complete a job is lessened considerably. In addition, the technology is able to compact material by a much larger factor when compared to compaction by manual removal. Therefore, waste disposal costs are also considerably lower. However, there are things to consider before electing to use this method of removal. For instance, the cost of mobilizing this equipment to a site is considerably greater than mobilizing a crew. However, due to the fact that the technology is cheaper on a per square foot basis, fixed costs such as mobilization can be recouped if the area to be removed is large enough to compensate for the cost of mobilization. 🌱

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