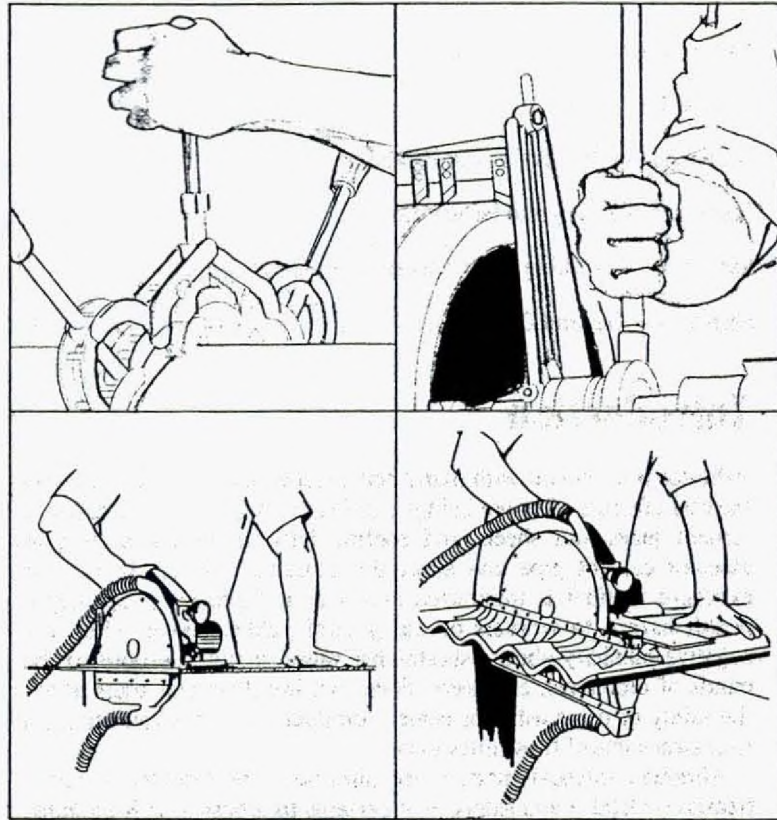




Q&A

Working With Asbestos Cement

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Introduction

Asbestos is a mineral with many beneficial applications. It is used in the manufacture of brake linings and fire clothing as well as asbestos cement pipes and sheets and roofing felts. In products such as asbestos cement pipe and sheet the asbestos is locked-in so that exposure to fiber is minimized and does not present a significant health hazard to workers or the general public. Nevertheless, the negative publicity about asbestos has raised many questions in the minds of architects, engineers, designers, installers and users about the safety of using asbestos cement products. This booklet attempts to answer some of those questions.

Although medical matters are discussed, the booklet is not a treatise on health and safety as it pertains to asbestos. It is intended to provide the reader with information to put in perspective the potential health hazards of asbestos cement products. For more information on recommended work practices for asbestos cement pipe and sheet, refer to:

Recommended Work Practices for AC Pipe (AWWA No. M 16)
American Water Works Association, 6666 Quincy Ave., Denver,
Colorado, 80235

and

Recommended Work Practices for A/C Pipe published by AC
Pipe Producers Association, Suite 1308, 1600 Wilson Blvd.,
Arlington, Virginia, 22209

and

"Recommended Work Practices for Field Fabrication of Asbestos
Cement Sheet" published by the Asbestos Information Ass-
ociation of North America; 1745 Jefferson Davis Hwy., Suite
509, Arlington, Virginia 22202

Section I—Asbestos

Q. *What is asbestos?*

A. Asbestos is a generic term for a group of fibrous mineral silicates that occur naturally in virtually all parts of the world. The types of asbestos can be divided into two classes—serpentine and amphiboles. Chrysotile is the only member of the serpentine family and is often referred to as “white asbestos”. The most common members of the amphibole family are crocidolite “blue asbestos” and amosite. Other amphiboles include tremolite, actinolite and anthophyllite. Chrysotile accounts for approximately 95% of the world’s fiber production and practically all of the remaining 5% is divided between amosite and crocidolite.

Q. *Where does asbestos come from?*

A. Asbestos is mined in many parts of the world. The major producing countries include Canada, South Africa, Zimbabwe (Rhodesia), USSR, United States, Italy, Brazil and Australia.

Q. *How is asbestos mined and processed?*

A. Most asbestos mines are open pit mining operations. The ore is hauled to a crusher where it is broken into smaller pieces and conveyed to a processing mill. In the milling operation the fiber is separated from the host rock by a series of screens and the fibers are drawn off by vacuum. They are graded by length and degree of openness and then pressure packed in plastic bags to minimize fiber release.

Q. *What products use asbestos?*

A. The main properties which give asbestos its commercial value are its incombustibility, strength, resistance to high temperatures, electric currents, and alkalis. The amphiboles are resistant to acid. It is often said that asbestos is used in over 3,000 different products. Categories of use include: asbestos cement water and sewer pipe, asbestos cement sheet and shingles, flooring products, built-up roofing felt, pipeline felt, specialty papers, packings and gaskets, friction materials, coatings, caulks and sealants, textiles, plastics, and drilling muds.

Q. *Is there a good substitute for asbestos?*

A. At this time there is no single fiber available that can match the performance of asbestos. Although some fibers and some alternate products can be used in place of asbestos or asbestos products, in just about every case,

the substitute product does not perform as well and is not as cost effective. Furthermore, the health effects of most of the substitutes are not known.

SECTION II—CEMENT PRODUCTS

Q. *What types of asbestos fiber and what quantities (by weight) are used in asbestos cement products made in North America?*

A. *Building Products:*

Corrugated sheets, flat sheets and moulded products, which are not insulation boards, normally contain 10-25% chrysotile fiber. Some specialty products can contain up to 50% chrysotile fiber.

Insulation Boards:

Usually a blend of 15% chrysotile and 15% amosite fibers.

Pipes:

Asbestos cement pressure pipe contains approximately 13-15% chrysotile fiber and 3-5% crocidolite or amosite fiber.

Asbestos cement sewer pipe contains approximately 10% to 11% chrysotile fiber and 2% to 3% crocidolite fiber or amosite fiber.

Q. *Why continue to use asbestos cement products?*

A. AC products provide functional and economic advantages. Because of the resistance of asbestos to most elements there are no known substitutes which can economically be used. The safety of these substitutes are unknown. Asbestos cement pipe, for example, has been used for over 50 years. In areas with corrosive soil, asbestos cement pipe has proven to be an excellent and durable performer. Smooth bore allows water to be pumped with less resistance to flow and less energy costs. In most cases, asbestos cement pipe is the most cost effective product for the conveyance of potable water or sewage.

Asbestos cement sheets and shingles are fire resistant, rot resistant, vermin resistant, and extremely durable. They provide excellent service life for both interior and exterior applications. In industrial applications, asbestos cement products can resist the corrosiveness of many types of chemical environments. Again, on a cost effective basis, asbestos cement sheet and shingles have proven their advantages for many applications. Also, asbestos cement products require less energy to manufacture than most of their competitive products.

SECTION III—SAFETY AND HEALTH FACTS

Q. *What are the health problems associated with exposure to asbestos?*

A. Asbestos health problems are associated primarily with past occupationally related exposure. There is no evidence of any increased health risk to the general public from the current uses of asbestos in our society. The three major health problems that are associated with excessive inhalation of asbestos are: asbestosis, lung cancer and mesothelioma.

Asbestosis is a scarring of the lung tissue which can interfere with breathing capacity. Asbestosis is one of a family of diseases classified as pneumoconioses which also includes diseases from excessive exposure to silica (silicosis), and coal dust (black lung disease). Asbestosis is not a malignant disease (cancer) and cannot become malignant.

Lung cancer is a significant cause of death among those occupationally exposed to asbestos. However, medical studies have clearly demonstrated that, but for cigarette smoking, the incidence of lung cancer in asbestos workers would be close to that normally expected in the general population.

Mesothelioma is a rare cancer of the tissues lining the chest or abdominal cavity. While there appears to be a definite link between mesothelioma and asbestos exposure, there are indications that other agents also cause or contribute to it. There is no evidence of an increase in the occurrence of mesothelioma in the general public.

Q. *Why are we seeing so many cases of asbestos-related disease today?*

A. Because of the long time it takes for the asbestos-related disease to develop after exposure. The disease incidence seen today is the result of excessive work related exposures, many years ago, when little was known about the dangers associated with asbestos and exposure controls were minimal.

Q. *Will people exposed to current permissible levels of asbestos continue to develop disease?*

A. We believe that this will not be the case. Under today's controlled work conditions in asbestos using facilities and at sites where asbestos products are handled, exposure

"Friable" products refer to asbestos products which during routine handling or use can create airborne fiber concentrations in excess of the permissible limits. These products are easily crumbled or pulverized and do not possess physical characteristics or the work practices controls to ensure permissible exposure limits are met. Such products would include insulating cements and thermal insulations which no longer are manufactured with asbestos.

Q. *What are recommended work practices?*

A. These are methods of handling, processing, installation or removal, tested and recommended by the industry to insure that as little respirable asbestos as possible is released.

Q. *Where can copies of work practice manuals be obtained?*

A. Recommended work practice manuals for asbestos cement products can be obtained from manufacturers of those products, from the Asbestos Information Association/North America, the Association of Asbestos Cement Pipe Producers or the American Water Works Association. The addresses of these associations are given in the beginning of this booklet.

Q. *Is there any danger in handling, stocking, loading or assembling full size or cut pieces of asbestos cement sheets, or machined or unmachined pieces of pipe.*

A. If recommended work practices are followed, fiber levels created are far below permissible or proposed exposure levels. When handling these products, instructions contained in manufacturing installation manuals should be followed.

Q. *When assembling or fabricating asbestos cement products on site, it is sometimes necessary to cut, drill, mitre, or file these products. Is it necessary to take precautions?*

A. Hand sawing or drilling of asbestos cement—the usual site operations—require no special precautions when carried out in the open air. The exposures resulting from these operations are far below permissible exposure levels. However, operations with high speed, power operated machinery with abrasive cutting or sanding discs, carbide blades, etc. can create respirable dust levels above the permissible exposure levels. These types of operations require either proper tools or work practices.

Q. *How should waste and off-cuts be disposed of?*

A. Asbestos cement dust and chips from sawing or other operations should be vacuumed up periodically during work so that there is no accumulation of dust around the

work station. Vacuums should be equipped with a high efficiency dust collector. Where vacuuming is not possible, the dust should be wetted and swept up while still damp and bagged in polyethylene bags, sealed and labeled. These bags should be disposed of at proper dump sites. Other wastes can be disposed of in the same manner but always in accordance with local regulations.

- Q. *Does mechanical damage to asbestos cement products cause a hazard?*
- A. Mechanical damage to an asbestos cement product usually results in the release of asbestos below permissible levels or proposed levels. This is because the fibers are locked in the product.
- Q. *Can asbestos cement sheets be removed safely from a structure?*
- A. Yes, but the same care taken to erect the sheets should be followed. They should not be smashed from the building, but dismantled and lowered carefully to the ground. If sheets should be broken in dismantling, the pieces should be gathered up and disposed of in the prescribed manner. They should not be allowed to lie around the site to be ground into dust.

SECTION V— GENERAL CONCERNS

- Q. *Some workers are refusing to handle asbestos products. What can be done to convince them that they have nothing to fear if sensible precautions are taken?*
- A. Their reaction is understandable in the light of the negative publicity. Presently, there is no known evidence of anyone contracting an asbestos-related disease through handling an asbestos cement product in the field. If excessive amounts of dust are likely to be created, certain precautions must be taken. Each worker should be given a copy of the work practices manuals and proper work practices should be reviewed with them. Manufacturers of asbestos cement products also have safety education presentations that can be shown to workers handling asbestos cement products.
- Q. *Some workers are refusing to work near asbestos products which are being installed. What can be done?*
- A. The previous answer applies here. If recommended work practices are followed, hazard of exposure is negligible.
- Q. *Some health and safety inspectors are requiring masks and protective clothing for hand sawing and drilling of asbestos cement sheets on site. Is this necessary?*
- A. Not if proper tools and work practices are used. By following the work practices prescribed in the industry developed manuals, dust counts can be kept well below the

permissible limits above which it is required to use masks and protective clothing. Local regulations should be consulted.

- Q. *Are medical examinations required for all workers handling asbestos cement products?*
- A. Exposure levels above which medical examinations are required vary from country to country. If the proper work practices are followed, in many cases medical examinations will not be necessary. In any case, government regulations should be followed.
- Q. *Is asbestos a major air pollutant?*
- A. No. Many studies have been conducted of asbestos fiber levels in the ambient air across the country. The levels were found to be far below permissible limits for occupational exposures. There is no evidence of an increased health risk to the general public from current uses of asbestos in our society.
- Q. *What should be done about sprayed asbestos insulation and textured ceiling material used in schools and other public buildings?*
- A. Each site application must be considered independently. If the material is not flaking off or directly accessible, then it usually can be allowed to remain in place. Dust counts in buildings with sprayed asbestos insulation in this condition, in most instances indicate levels similar to ambient air. Where the sprayed insulation is directly accessible or is flaking off from abuse, it should be sealed, enclosed or removed.
- Q. *Is it safe to live and work in buildings where asbestos building products have been used?*
- A. Dust counts have been taken in many buildings incorporating all types of asbestos cement products. Such measurements show that asbestos levels are no greater than those in buildings with no asbestos in them. There is no evidence of anyone contracting an asbestos-related disease as the result of living in a building which has asbestos cement products in the structure.
- Q. *Should asbestos products continue to be used?*
- A. Engineers, architects and designers are required every day to make decisions as to the cost effectiveness of using a product versus the risks associated with the use of the product. The countless benefits, proven performance, and cost effectiveness which have been obtained over the years from the use of asbestos cement products should not be overlooked because of problems which occurred due to improper handling of some asbestos products in the past. There are no significant health risks if the materials are used and handled properly.



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