Health and Safety Facts:

Questions and Answers Concerning Asbestos

Johns-Manville

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General

What is asbestos?

It is a hydrous magnesium silicate mineral . . . a natural fiber with a unique combination of properties . . . flexibility, great strength, very large surface area and excellent fire resistance . . . an ideal material for many products.

How was asbestos formed?

Chrysotile asbestos was formed during remote geologic ages at times of tremendous subterranean upheavals which resulted in masses of molten basic rocks being spewed upward into the earth's crust by terrific heat and pressure. Slowly, over a long period of time, parts of these intrusions were altered by hot aqueous solutions to form serpentine.

At some later period, further great disturbances occurred causing fracturing and shearing of the rocks. Hot solutions entered and filled these fractures and dissolved some of the magnesium silicate rock constituents adjacent to the fractures. As temperatures and pressures diminished, the magnesium silicate solutions in the serpentine became super-saturated and crystallized into chrysotile asbestos. Eventually the fractures along which the hot solutions had circulated and became a network of fibrous crystalline veins in an irregular pattern throughout the mass of basic rock.

Why all the furor over asbestos?

We now know that some exposure in occupationally related environments, under conditions which existed years ago, were excessive and could have resulted in asbestos-related diseases. These diseases continue to appear today because of the long lapse of time from the beginning of exposure to the point at which the disease has developed enough to be diagnosed. This time lapse, known as the latency period, may be as much as forty years. The asbestos diseases we are seeing currently are an unfortunate legacy of the past. Today, because of intense research and monitoring, we believe that there is a level of exposure to asbestos fiber below which there is no evidence of an increased health risk. This level can be achieved by adherence to proper work practices and industrial hygiene. Since those days of early exposure, we have come far, both in terms of our knowledge of occupationally related hazards in a wide variety of industries and in our ability to control those exposures. In fact, asbestos workers are among the most highly protected in this country today.

Why hasn't more been written or published about the value of asbestos?

Generally, the industry has felt that the inherent qualities of the product and the implementation of proper work practices would be enough to satisfy concerns about asbestos, but that's not always the case. So, through the media and personal contact, J-M and the industry are now presenting the positive aspects of asbestos.

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Why doesn't J-M just get out of the asbestos business?

Asbestos can be used safely and serves an indispensible role in our society. The health issues we are all reading about now are the result of the excessive exposures of the past. To discontinue the use of asbestos under current regulatory standards would result in no known health benefits, but would result in increased costs to society from the loss of the economic benefits of asbestos. Frankly, as a society, we are better off dealing with a product where the health hazards have been extensively studied, are well-known and manageable, rather than dealing with unknowns.

Is asbestos important to the economy?

It is very important. Without it, a wide variety of products could not be manufactured. Many products that are utilized as replacements for asbestos products have been found to sell for generally higher prices, without apparent advantage in performance to off-set the increased cost. Others have worse performance than asbestos products, with a resulting hidden increase in cost, and in some cases, a potential decrease in safety.

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General Products

Why not ban all production of asbestos products?

Asbestos products have served and can continue to serve society without endangering anyone's health. The majority of present day asbestos products fall into two main categories; encapsulated or "locked-in". They both describe manufacturing processes which make asbestos products safe to use.

"Locked-in" Products are those that during routine, handling and end use do not release fibers in excess of mandated limits, but may do so *during fabrication* and machining operations. In almost every case airborne fiber concentrations created during fabrication can be easily maintained below maximum allowable levels by use of proper tools and work practices. During installation and removal of "locked-in" products the use of safe work practices can insure that asbestos fiber in dangerous levels will not be released.

Products included in this category are: Asbestos-cement products, reinforced plastics, friction materials, millboard and treated asbestos textiles.

Encapsulated Products are those in which the asbestos fiber is completely enshrouded by asphalt, latex, rubber, or some other resilient material. Encapsulated products are so safe that they do not normally require special work practices or government control.

Encapsulated products include asphalt coatings, roofing felts, oil seals, mechanical packings, compressed and beater-ad gaskets, sheet flooring and vinyl-asbestos tile and electrical insulation paper.

The use of asbestos in these products provides the most cost effective method of manufacturing the products.

Are all asbestos products encapsulated or "locked-in"?

There is a third category of asbestos products that is defined as friable or brittle and easily crumbled. Friable asbestos-containing products should not be used today, except when no substitute can be found. They should be labeled and precautions to assure their safe use *must* be employed.

What are some of the asbestos-containing products defined as friable?

The following products are considered friable:

Calcium Silicate Pipe and Block Insulation
Used around furnaces and steam lines.

Insulating Cements
Specially formulated blends of asbestos and other cements used around furnaces.

Sprayed Fireproofing
Blends of asbestos and other materials used from the late 1940's to 1973 as a fireproofing. Fibers are not normally released unless these products are disturbed.

Joint Cements
Spackling compounds used to seal and cover the joints in gypsum wallboard. Fibers are released when the material is sanded to a smooth finish.

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Untreated Textiles
Asbestos textiles which have no binder or coating. These materials are not generally manufactured today but could be found in maintenance storage areas. They were used for welding cloths and fireproof curtains and blankets.

Why haven't all friable asbestos products been removed from the market?

Industry has made a concerted effort to remove friable products from the market. However there are products for which no substitute has been found and which protect workers from harm in certain specialized industries, for example in the metal industry, Molten Metal Marinite™ is used. These products should be used only in full compliance with Government regulations.

Specific Products

A/C Pipe

Are there reasons for concern about drinking water that is carried by asbestos-cement pipe?

Asbestos in A/C pipe is firmly "locked-in" by a cement binder. Further, there is no supportable evidence that asbestos in drinking water has any kind of impact on increasing the risk of cancer. Studies on populations exposed to asbestos in drinking water from natural sources in areas where asbestos is a part of the earth's crust and on populations receiving drinking water through asbestos-cement pipe have uniformly failed to demonstrate any causal relationship between the ingestion of asbestos in water and any adverse health effects.

Are there any health risks to people installing A/C pipes?

Not if recommended work practices are followed. Normal handling and installation will not generate dust, but cutting and finishing of pipes with high speed power saws could create airborne asbestos. A list of recommended tools and work practices is available through many groups, such as the Asbestos/Cement Pipe Producers Association and the American Water Works Association.

A/C Sheets and Shingles

When assembling or fixing A/C products on site, it is sometimes necessary to cut, drill, miter, file, etc. Is it necessary to take precautions?

Hand sawing or drilling of asbestos-cement sheets—the usual site operations—require no unusual precautions. This is because the debris is in the form of asbestos-cement chips and still "locked-in". Monitoring has shown that fiber levels in the atmosphere during these operations will be less than the permissible exposure limit of 2 fibers/cc.

However, many other operations, such as the use of power operated masonry saws for cutting of asbestos-cement building products, pipes and millboard, can create respirable dust above 2 fibers/cc and the prescribed precautions should be taken.

Recommended work practices have been established by industry associations in the U. S. A., such as the Asbestos Information Association (A. I. A.) and Asbestos/Cement Pipe Producers Association (A/CPPA), for working with asbestos-cement pipes and construction materials. These are available directly from the associations or from manufacturers and distributors of the asbestos-cement products.

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When we field fabricate A/C sheets—do we have to provide medical exams to our employees?

Exposure levels above which medical examinations are required vary from country to country. In the United States, according to OSHA Instruction CPL 2-2.21A, medical surveillance is not required when dust counts are below 0.1 f/cc based on a 7 to 8 hour time-weighted average.

In a cooling tower utilizing A/C sheets—will the constant water flow over the sheets release asbestos that will be carried away by the steam?

According to a report prepared by the U.S. Nuclear Regulatory Commission by the Argonne National Laboratory, estimates made using drift deposition models indicate that asbestos concentrations in the air at ground level were so low that monitoring for asbestos in drift from cooling towers does not appear to be warranted.

Friction Materials

Is there a health threat to workers replacing asbestos-containing friction materials?

Safe work practices, utilizing either wet cleaning or vacuums with high efficiency air filters to remove the dust from a brake assembly, have been developed. These safe work practices will prevent asbestos exposure for these workers and should be used. Blowing the dust from the brake assembly with compressed air should not be done.

A description of the safe work practices is available from many organizations, including the Friction Materials Standards Institute.

Is there any danger to the public from asbestos used in brake linings?

Scientific studies regarding asbestos-containing friction materials, including one by the U.S. Public Health Service concluded that asbestos released from brake lining wear was "an inconsequential health factor in urban air pollution".

If asbestos-containing friction materials are safe and cost effective, why are the major auto companies replacing them in some brake systems?

Engineering reasons have prompted the change in disc braking systems only. Due to the down-sizing of automobiles for increased fuel efficiency, the braking system has also become smaller with closer tolerances. With the closer tolerances and smaller friction pads in disc systems, higher heats are generated during stops. This heat is generally considered too high for the common organic (resin/asbestos) linings. Asbestos continues to be the preferred material for drum linings and larger disc systems.

Gaskets and Packings

Sometimes when gasketing material is removed, some residual pieces of the gasket remain attached and have to be scraped off before a new gasket can be installed. Is this removal hazardous?

In 1978, a report was issued on a study of "Asbestos Exposure from Gasket Operations", conducted by the Industrial Hygiene Branch, Occupational and Environmental Health Service, Naval Regional Medical Center at Puget Sound Navy Yard.

Part of this study was devoted to taking dust counts during gasket removal combined with final cleanup of residual gasketing material by either using a hand scraper or a wire brush.

In both cases the average fiber concentrations were found to be below 0.5 f/cc, well below the current exposure standards of 2.0 f/cc. The report also notes that although wire brushing by its mechanical action will produce higher dust concentrations, use of basic housekeeping controls maintains airborne concentrations at levels comparable to hand scraping.

Since wire brushing tends to produce slightly higher dust concentrations, hand scraping is the recommended work practice.

If asbestos-containing gasketing material is safe and cost effective, why are companies pushing non-asbestos?

The gasket market has always been extremely competitive. Some companies have decided to pursue the promotion of new non-asbestos products to gain a competitive edge. Also customers who are not familiar with the facts about asbestos, other than what they read in the media, are pressuring companies to remove asbestos from products. Most of the major manufacturers of gaskets and packing materials continue to supply both asbestos products and substitutes.

Roofing Products

Is there a significant asbestos release in putting on or tearing off a built-up roof?

Between 1974 and 1977 J-M conducted studies on asbestos built-up roofing work. A total of nine jobs were studied—4 new roofs and 5 involving tear-off. The fiber exposure ranges were: New work, 0.1 to 0.6 f/cc; Tear off, 0.1 to 0.4 f/cc. These relatively low exposures are attributable to the fact that the asbestos fibers are encapsulated by saturants and/or coatings in the manufacturing process. There is no medical evidence to indicate that a health hazard exists when asbestos felts are used in built-up roofing, either during insulation, use, or tear-off. Asphalt roof coatings or cements contain asbestos which is encapsulated by asphaltic binders.

Safety and Health

What are the diseases associated with asbestos?

Asbestosis is a scarring of the lungs that can cause disability by interfering with the breathing capacity of a person.

Asbestosis is not cancer and does not develop into cancer.

The second disease is lung cancer. Medical studies have confirmed that, but for cigarette smoking, there would be no significant lung cancer related to excessive asbestos exposure . . . virtually none.

Mesothelioma is the third disease. It is a rare cancer of the lining of the chest or abdomen. Mesothelioma is commonly misconceived as being caused only by asbestos exposure. Mesothelioma has occurred in persons with no known exposure to asbestos. Also, at least two environmental factors other than asbestos, i.e. naturally occurring fibrous zeolite and sugar cane farming, have been linked with mesothelioma.

What have been the circumstances of the injuries resulting from asbestos-related disease?

Excessive exposure to asbestos has accounted for asbestos-related disease. The incidence of these diseases reflects the lack of knowledge in the past both in terms of exposure levels, controls, and the understanding of disease development. What we are faced with today is a tragic legacy of that incomplete knowledge.

Asbestos-related disease was found back in the early 1930's. What was done to protect the worker then?

Much was done in the 1930's and thereafter. Unfortunately the amount of information available was not sufficient to provide complete protection. In the 1930's there was general knowledge that asbestosis could occur among mill and factory workers only. Dust control equipment was installed in many operations, and other precautionary measures taken.

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Recommended exposure standards were established in 1938 by the U.S. Public Health Service based on studies of asbestos workers.

There was no awareness at that time that cancer was associated with asbestos exposure or that any worker group was at risk outside of the mill and factory workers.

The exposure standard adopted by the U.S. Public Health Service was regularly reviewed by the American Conference of Governmental Industrial Hygienists, a group to which industry could not belong and, based upon the medical evidence available, the standard remained unchanged and unchallenged for over 25 years.

How can we be sure that present standards are protective when history shows that past standards, which we thought to be safe turned out not to be?

The state of medical knowledge, scientific testing procedures and the body of knowledge of specific health hazards related to excessive asbestos exposure are so much further advanced today. The profound interest in asbestos-related health problems has resulted in extensive research and clinical studies on which to base scientific opinion. These studies have now covered tens of thousands of workers in varying occupations over several decades, and no excess disease has been found among the workers receiving low levels of exposure even though those exposures have in some instances exceeded current occupational standards.

Is there any reason for people who have become employed by the asbestos industry in recent years to be concerned about their health?

There is no more reason for concern than for anyone working with any potentially hazardous material. Many precautions are taken by industry to ensure that exposures are minimized. With today's efficient environmental control systems, changes in processes and equipment, and constant monitoring of the workplace, there is no reason to believe there is any increased risk to the health of workers in the asbestos industry as long as conditions are properly controlled and employees follow safe work practices.

Is there a risk to the general public from asbestos-containing products?

Despite headlines and conjecture, there is no evidence of any health risk to the general public from the use of asbestos in our modern society.

While past exposures to asbestos in occupational environments have resulted in an increased health risk in some worker populations, several points should be noted in any discussion of public health concerns.

—Increased risk of disease has been demonstrated only in occupational and paraoccupational (work-related) environments.

—The present disease problem is a legacy of the past. Cases of asbestos-related disease being seen today are not an indication of present conditions, but of conditions and exposures that existed decades ago when not enough was known about the health effects and the ways to control exposures.

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—Asbestos is only one of many naturally occurring substances that can, under excessive exposure situations, produce disease in humans. Yet medical research has clearly established that exposure to these materials, including asbestos, can occur with no demonstrable increase in health risk. In fact, studies of populations exposed to asbestos naturally in air and water through erosion from the earth's crust have shown no impact on morbidity or mortality from such exposure (no increased health risk).

—The vast majority of asbestos-containing products need pose no risk to users because the form in which they are received and the way in which they are used preclude fibers from becoming airborne.

Although it is understandable to be concerned about the presence of any potentially harmful material in our everyday environment, it is important to remember that asbestos is one of the most thoroughly studied environmental agents. This intensive research has shown that there need be no reason for the public to be concerned about the modern uses of asbestos fiber.

What is J-M's position on smoking?

The effect of asbestos exposure on smokers and non-smokers has been extensively researched including epidemiological studies in mines, shipyards, and factories.

The evidence is clear that smokers assume a serious risk to health and are more susceptible to occupational exposures than non-smokers. For example, studies of workers heavily exposed to asbestos in past decades demonstrate a pronounced increase in the risk factor normally associated with smoking.

Consequently, J-M has instituted an intensive educational program and implemented work rules to discourage smoking among workers at its asbestos-using operations.

Smoke-ending classes have been organized at these plant locations to assist employees in the effort to give up smoking.

In short, we feel strongly that smoking constitutes an unnecessary and controllable risk in the workplace.

Is it true that even a low dose or brief exposure to asbestos may present a potentially hazardous condition?

There is a general tendency to equate short-term exposures with low doses, which is incorrect. Dose by definition is the result of multiplying the concentration of the agent by the duration of exposure, and both values are critical. There is evidence that what are unscientifically called low exposures by reason of their brief duration represent high doses in actuality because the concentrations were extremely intense. Results of investigations indicate that short-term exposure can result in disease only in combination with high concentrations of fiber.

It is also important to remember that cancer occurs in humans with a high degree of frequency even when there has been no known exposure to asbestos. Thus, some cancers blamed on so-called brief asbestos exposure may in fact be attributable to other causes.

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Since more asbestos is used today than in the past, aren't the chances for hazardous exposures greater?

Although the amount of asbestos fiber being used has increased over the past thirty years, there has been a very significant change in the manner of use and in the nature of the products containing asbestos fiber. Particular emphasis has been placed on industrial hygiene practices, on process controls, and on general environmental engineering technology, all of which have greatly reduced airborne asbestos emissions. In addition, emphasis has been placed on products containing asbestos fiber in "locked-in" or encapsulated form so that the possibility of asbestos fiber becoming airborne is virtually eliminated. As a result of these measures, in the future there will be a reduction rather than an increase in new cases of asbestos-related disease.

Are families of asbestos workers at risk?

Cases of asbestos-related disease have been reported in family members of asbestos workers. There has been a tendency to characterize the dose to which family members were exposed as low when, in fact, there is no data to substantiate this position. Actually, past exposures to fiber accumulated on work clothes and shaken out inside the home is believed to have created high, not low exposure. Strict adherence to current industrial hygiene practices can eliminate this situation.

School

Does the asbestos used in schools and other public buildings pose a public hazard?

In a 1981 report entitled "Indoor Pollutants" by the National Research Council the issue of indoor contamination by asbestos is discussed. The report compares indoor and outdoor fiber counts, and states "Fortunately, during normal use, buildings containing asbestos have not shown indoor fiber counts higher than outdoor counts. Current data is very limited and apply mostly to schools and a few office buildings, but it appears that the general public exposure to asbestos fiber is exceedingly low in public buildings."

What is being done about the asbestos-sprayed material already in schools?

The Environmental Protection Agency (EPA) has established a mandatory inspection program for schools to determine if there is asbestos in their construction materials, and voluntary guidelines for what to do if the materials are deteriorating due to abuse or water damage. Guidance manuals for addressing this situation are available from the EPA.

Compensation, Legal Cover-up, Liability

Was J-M involved in any type of cover-up on the health effects of asbestos?

The evidence clearly shows the opposite. J-M's extensive support of medical research on the potential health hazards of asbestos has continued on an ever increasing scale since the 1930's. The company sponsored one medical study after another, adopting their conclusions and recommendations. Results of those studies were published and shared with the medical community, government, industry and the unions.

J-M undertook immediate action to reduce and control exposure levels as recommended by known authorities. In some cases, the company pioneered in the development of unique ventilation and dust-control equipment and shared this technology with other manufacturers. These are hardly the actions of a company trying to cover-up.

Why does the media often portray the asbestos industry in an unfavorable light when the record shows responsible actions?

Asbestos and health is a complex subject that is often confused and misunderstood. Much of the incomplete or inaccurate media coverage is a result of inadequate time for reporters to become educated on complex issues. In addition, the facts simply stated don't make good headlines. Instead, the media tends towards sensationalism or exaggeration. J-M and others in the asbestos industry have been the target of preconceived story lines, rather than the subject of thoughtful analysis. By continuing to work with the media and educate them, we are beginning to see more balanced reporting and hope it will continue in the future.

Compensation legislation has been proposed in Congress for people disabled by asbestos disease. Isn't that a bail-out for Johns-Manville?

No it isn't. The costs to J-M resulting from compensation legislation could be about the same or even more than what our costs would be if we continue to fight every case in the courts. Besides, the concept of a "bail-out" assumes that liability for asbestos-related diseases belongs only to the industry. This assumption is false.

What is important about the compensation legislation is that it would provide a fair, equitable and speedy means for delivering compensation to those who deserve it. The alternative is for the money that could go for compensation to be eaten up in court costs and legal fees . . . with the persons needing compensation, in actuality, ending up with very little. The only contribution by the government under this legislation would be in cases where a neutral panel determined that the government contributed to the problem, such as in government-controlled shipyards.

What is the chance that Congress will pass some type of compensation legislation?

There is growing recognition from segments of the business, labor, and medical communities that some type of legislation is needed on this subject. We estimate that it might take two or three years for such a measure to clear both houses of Congress.

How much liability will the government accept for its use or misuse of asbestos in shipyards?

As of now, the U. S. Government has been unwilling to accept any legal responsibility. The U. S. District Court in Virginia has ruled that, though the government was negligent in many areas, it does not have to share in compensating injured government employees. The facts are that the government specified the product, controlled the work practices, and established the exposure standards. J-M is appealing that decision.

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Regulations

What is the outlook on future government regulations on asbestos?

The objective of the asbestos industry is to assist government in achieving a regulatory environment that both protects health and encourages the safe and productive use of asbestos and asbestos-containing products. Johns-Manville is confident that industry can successfully cooperate with the agencies to develop and implement workable alternatives that are reasonable, meaningful and cost-effective.

Work Practice Information

General Asbestos Containing Products

Asbestos Information Association
1745 Jefferson Davis Highway
Crystal Square 4, Suite 509
Arlington, Virginia 22202
Attention: Mr. Bob Pigg
Phone: 703-979-1150

Specific Product Information

Asbestos Cement Pipe:
Asbestos Cement Pipe Producers Association
1600 Wilson Blvd.
Suite 1008
Arlington, Virginia 22209
Attention: Mr. John F. Welch
Phone: 703-841-1556

American Water Works Association
6666 West Quincy Avenue
Denver, Colorado 80235
Attention: Mr. John I. Capito
Phone: 303-794-7711

Friction Materials:
Friction Materials Standards Institute
E. 210 Route 4
Paramus, N. J. 07652
Attention: Mr. Ed Drislane
Phone: 201-845-0440

Flooring:
Resilient Floor Covering Institute
1030 - 15th St., N.W., Suite 350
Washington, D. C. 20005
Attention: Mr. Robert D. Maurer
Phone: 202-833-2635

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4. Johns-Manville "Asbestos Paper for Roofing Felt", Chrysotile Asbestos Fiber Technical Bulletin.

5. Johns-Manville "Asphalt Coatings". Chrysotile Asbestos Fiber Technical Bulletin.

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