

Asbestos: Miracle Mineral and Deadly Carcinogen

Armen Mekhdjian

Stories concerning asbestos have appeared in many newspapers, medical journals, and court cases in the past decades. Asbestos is the name given to a group of silicate minerals with separable, long fibers, strong enough to be spun and woven. These fibers were extensively used for industrial purposes due to their resistivity to heat, fire, and chemicals and their ability to serve as electric insulators.

Although asbestos fibers were commonly used in construction applications, inhalation of asbestos dust at high concentrations for long periods causes serious health problems including lung cancer. Asbestos was severely restricted by the EPA in 1973 after high doses of its fibers were found to scar the lungs, causing cancer and other diseases. However, by that time, 30 million tons of asbestos had been wrapped around heating pipes and furnaces, sprayed onto girders and mixed into textiles. Now due to the health hazards, property owners have to pay large amounts of money to remove traces of asbestos or to cover them with sealant.

Due to the detrimental health effects of prolonged exposure to asbestos, many construction workers and miners that inhaled asbestos fibers developed lung diseases. Therefore, they sued their employers for not revealing the potential hazards of asbestos inhalation. Asbestos litigation is the most expensive mass tort in United States history. This litigation is the main reason why numerous manufacturing companies utilizing asbestos have declared bankruptcy.

Uses and Applications

Asbestos is a set of six naturally occurring silicate minerals, chrysotile, amosite, crocidolite, tremolite, anthophyllite, and actinolite. Chrysotile falls under the serpentine class and is more commonly referred to as “white asbestos.” Chrysotile is the most commonly

encountered form of asbestos, accounting for approximately 95% of the asbestos in place in the United States. The chemical formula for chrysotile is $\text{Mg}_3(\text{Si}_2\text{O}_5)(\text{OH})_4$. All the other forms of asbestos fall under the amphibole class; amosite (“brown asbestos”) is $\text{Fe}_7\text{Si}_8\text{O}_{22}(\text{OH})_2$, crocidolite (“blue asbestos”) is $\text{Na}_2\text{Fe}^{2+}_3\text{Fe}^{3+}_2\text{Si}_8\text{O}_{22}(\text{OH})_2$. Tremolite, anthophyllite, and actinolite asbestos are less commonly used industrially but are still found in a variety of construction materials and insulation. Tremolite has the chemical formula $\text{Ca}_2\text{Mg}_5\text{Si}_8\text{O}_{22}(\text{OH})_2$, anthophyllite $(\text{Mg}, \text{Fe})_7\text{Si}_8\text{O}_{22}(\text{OH})_2$, and actinolite $\text{Ca}_2(\text{Mg}, \text{Fe})_5(\text{Si}_8\text{O}_{22})(\text{OH})_2$.

Asbestos is known for its tensile strength and sound absorption, and for its resistance to heat, electrical and chemical damage. Fireproofing is probably the most important use of asbestos; it is non-flammable and non-combustible. Due to these remarkable properties, asbestos earned the nickname “miracle mineral”; it was used in many household products such as insulation, fire-retardant gloves, and fireproofing paints. The building and construction industries have used asbestos fibers for strengthening cement and plastics as well as for insulation, roofing, fireproofing, and sound absorption. The shipbuilding industry has used asbestos fibers as insulation of boilers, steam pipes, and hot-water pipes. The automotive industry has used asbestos in vehicle brake shoes and clutch pads. In addition, asbestos has been found in ceiling and floor tiles, paints, coatings, adhesives, and plastics.

Health Issues

Health issues due to inhalation of asbestos fibers were noted as early as the first century AD; the Greeks and Romans who made asbestos cloth noticed that the slaves who wove the cloth developed lung sickness. When products containing asbestos are disturbed, tiny asbestos fibers are released into the air. When these fibers are breathed in, they may get trapped in the lungs for very long periods of time.

In the 1890s, asbestos became a raw material for large manufacturing industries, exposing their workers to asbestos dust. Asbestos caused diseases that often developed several decades after exposure; therefore, the workers that inhaled asbestos dust in the 1890s

did not develop symptoms until the 1910s. In 1961, Dr. Irving Selikoff of New York's Mount Sinai Hospital and Dr. E. Cuyler Hammond of the American Cancer Society confirmed the appearance of lung disease and cancer among people exposed to asbestos at a Patterson, N.J. asbestos plant. They showed that even small quantities of inhaled asbestos could be lethal.

The best-known hazard of asbestos-exposure is mesothelioma, a cancer of the lining around the lungs, heart, and abdomen. The cancer is caused when someone breathes or swallows asbestos fibers that lodge in the lungs or stomach lining, where they remain for years before the damage they cause becomes evident. Today, we know that asbestos may cause a variety of serious health problems, including lung scarring, pleural plaques, asbestosis, in addition to lung cancer and mesothelioma. Asbestosis is an inflammatory condition affecting the lungs that can cause shortness of breath, coughing, and permanent lung damage. While most cases of mesothelioma result from exposure to asbestos over a long period of time, there are some cases where the exposure was short-term or even indirect. Family members of workers who handled asbestos and cities in close proximity to asbestos mines also were exposed to asbestos and have mesothelioma rates that are many times the national average.

In 1972 the Pittsburg Corning Corporation closed its asbestos insulation plant in Tyler, Texas. Medical experts estimated that as many as 300 of the 869 employed at the plant since 1954 would die of asbestosis, lung cancer, or cancers of the colon, rectum or stomach. The seriousness of the medical issues surrounding asbestos poisoning has motivated those who have been exposed to the lethal dust to seek compensation from those responsible for using asbestos in manufacturing.

There have been several measures taken by the United States government to prevent any further consequences of asbestos exposure to workers. The Occupational Safety and Health Administration (OSHA) is the Federal agency responsible for health and safety regulations in maritime, construction, manufacturing, and service workplaces. This agency established regulations dealing with asbestos exposure on the job that employers are required to follow. In addition, the Mine Safety and Health Administration (MSHA) enforces regulations

related to mine safety; workers are advised to use all protective equipment provided by their employers and follow recommended workplace practices and safety procedures.

Court Cases

Asbestos litigation is the longest, most expensive mass tort in U.S. history; tort law describes the body of law that concerns compensation for a person suffering from damages due to a party that is legally responsible. In most cases, asbestos litigation is initiated by miners and construction workers who had been in direct contact with asbestos dust; these miners and construction workers sue their employers for massive settlements. The basis of the accusations was that the employers failed to warn the workers of the detrimental health effects that follow from prolonged exposure to asbestos dust, and that employers failed to provide sufficient health care for affected workers. Because the symptoms of asbestos poisoning take nearly a decade to surface, the sued companies argue that the exposure to asbestos was from a different source, because many household materials were manufactured using asbestos.

The first asbestos-products lawsuit was filed in December 1966 by Claude Tomplait against eleven manufacturers of asbestos-containing insulation products. Claude Tomplait was diagnosed with asbestosis in that year and even though he had not been working in an asbestos factory, he identified the source of his illness as the asbestos used in making insulation. The case went to trial on May 12, 1969 and soon the verdict was returned in favor of the manufacturers. However, most manufacturing companies using asbestos in their products did not fare as well in lawsuits by people claiming that they became sick from asbestos exposure. Later in 1969, Clarence Borel, one of Tomplait's co-workers, filed a lawsuit against several asbestos manufacturers, because he had developed an asbestos-related disease. In this case, the verdict granted Mr. Borel \$80,000. The verdict in Mr. Borel's asbestos lawsuit stimulated a wave of asbestos trials across the United States as those who had developed lung disease from asbestos poisoning began to file claims against manufacturing and construction companies.

In 1974, the Johns-Manville manufacturing plant in Pittsburg, California was taken to court by attorney Steven Kazan in a precedent-setting civil lawsuit. Kazan was defending Reba Rudkin, who had developed asbestosis after working for 29 years at the plant. Normally, the company would be protected from such a lawsuit, because workers' compensation is the exclusive remedy for an employee suing an employer. However, Karzan argued that the company withheld information from Rudkin and other employees regarding the potential health hazards of asbestos. This qualified the lawsuit as one with fraud and conspiracy charges. In 1981, the California Supreme Court ruled against Johns-Manville and deemed it appropriate for employees to sue their employers in circumstances similar to the Rudkin case. With this ruling, many other employees of the company began to file civil lawsuits against Johns-Manville. Due to the large number of lawsuits against the company, Johns-Manville declared bankruptcy to avoid paying compensation to its workers. Other asbestos companies such as Eagle Picher, UNARCO, Amatex, H.K. Porter, Carey Canada, and Celotex also became victim to the increasing number of asbestos-related lawsuits. Within a few years, the entire asbestos textile industry had declared bankruptcy. The main reason why so many workers took their employees to court was that these asbestos companies failed to notify their workers of the risk and failed to take any preventative or mitigative action.

Asbestos litigation has had an enormous impact on American society in the last 40 years. Due to the sheer number and costs of asbestos trials, litigation has been challenging for every party involved. Roughly 730,000 asbestos claims have been filed over the last 40 years, including 200,000 that are still pending in state and federal courts. The total cost of asbestos litigation to American businesses has increased from \$1 billion in 1982 to \$70 billion in 2002, according to a study by the Rand Institute of Civil Justice. The costs suffered by American businesses due to asbestos litigation has driven at least 70 companies into bankruptcy, causing unemployment and lost wages.

Conclusion

Although asbestos has initially had a positive impact on many construction industries, the health hazards of asbestos deter from its usefulness. Even today, China, India, Indonesia, and Russia continue to mine asbestos heavily mostly for domestic use, despite its proven cancerous effects. Because litigation over asbestos exposure is the most expensive tort in the history of the United States, asbestos has had a massive negative impact on society. Asbestos litigation has cost American businesses over \$70 billion since 1982, while serious diseases stemming from asbestos exposure have affected over a million Americans. The enormity of the impact of asbestos on American society has turned a blessing into a tragic curse.

References

- [1] "Asbestos" <<http://en.wikipedia.org/wiki/Asbestos>>
- [2] "Medicine: Death from Dust." *Time Magazine*. 28 Jan. 1974. Web.
24 May 2010. <<http://www.time.com/time/world/article/0,9171,911072,00.html>>.
- [3] "In South Korea, Asbestos Compensation Comes Too Late." *Time Magazine*. 23 Feb. 2010. Web.
24 May 2010. <<http://www.time.com/time/world/article/0,8599,1967275,00.html>>.
- [4] Whitaker, Leslie. "Monster in the Closet: Asbestos." *Time Magazine*. 6 Feb. 1989. Web.
24 May 2010. <<http://www.time.com/time/magazine/article/0,9171,956877,00.html>>.
- [5] "Mesothelioma Resource Center" <<http://www.mesolawsuit.com/asbestos/>>
- [6] "National Cancer Institute: Asbestos Exposure and Cancer Risk"
<<http://en.wikipedia.org/wiki/Asbestos>>
- [7] "Asbestos Litigation History"
<http://www.ringsurf.com/online/2161-asbestos_litigation_history.html>