

## Asbestos Risks: Past and Present

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Asbestos is the commercial name given to a group of naturally occurring hydrated silica fibers that is associated with many lung diseases such as asbestosis, lung cancer and malignant mesothelioma (MM). Asbestos was used extensively in the industrial age due to its high tensile strength and flame-resistant properties. However, in the 1960's asbestos was shown to be associated with a number of pathologies in workers that handled the asbestos in mines and mills [1]. Workers in shipyards where asbestos was used for insulation, fireproofing and pipes as well as asbestos cement factory workers, among others, also developed asbestos-related diseases (which include asbestosis, lung cancer and malignant mesothelioma) [2,3]. In addition to the workers who were directly exposed to asbestos dust, other household members also developed asbestos-related diseases due to exposure to asbestos contaminated clothing [4,5]. In the USA asbestos usage for construction was banned in the 1970's; however, most uses of asbestos did not dwindle until the end of the 1980's. Although the use of asbestos is completely banned in the European Union, the use of asbestos is only partially banned in the United States. New uses of asbestos have been banned in the U.S. but old uses are still permitted: including brake pads and lining; clutch pads; asbestos cement sheets and roofing materials ([www.atsdr.cdc.gov/csem](http://www.atsdr.cdc.gov/csem)). In developing countries, asbestos is being used more without any government regulation and protection for workers resulting in increased asbestos consumption and related diseases world-wide. According to the International Programme on Chemical Safety (IPCS) of the WHO, 125 million people worldwide are currently exposed to asbestos in their workplaces ([www.who.int/ipcs](http://www.who.int/ipcs)). The WHO also reported that 107,000 people worldwide die from asbestos-related diseases each year ([www.who.int/mediacentre/factsheets](http://www.who.int/mediacentre/factsheets)). Asbestos-related diseases have a rather long latency period (10-60+ years after the initial exposure) and may not present any symptoms in the early stages of disease development. This makes early diagnoses and predictions of disease development after exposure challenging for medical personnel [6]. The predisposing factors that determine which disease an individual is exposed to asbestos will develop, have not yet been elucidated. Also, asbestos-related deaths are increasing due to late diagnoses and lack of effective therapeutics for the treatment of these diseases.

Despite the ban and drastic reduction in asbestos usage in the West, buildings built prior to the 1970's still contain asbestos-based insulation and drywall among other products. Consequently, any event that leads to the uncontrolled destruction of such structures has the potential to release vast amounts of asbestos dust into the environment. Although some asbestos containing products like asbestos sheets, cement and drywall tend to be stable, natural and manmade disasters can lead to disruption of the integrity of these construction materials. Due to the friable nature of the asbestos fibers, such disruptions will release microscopic asbestos fibers into the environment posing a hazard to the health of individuals in affected areas.

In recent times, natural disasters like the tornado that tore through the town of Joppa, AL; hurricane Katrina, the tsunami in Japan and cyclones in Australia and other areas are examples of occasions that can result in large numbers of people being inadvertently exposed to asbestos. The destruction of homes and factories as well as other commercial structures built prior to the 1970s (in the West) or more

recently in developing countries results in the exposure of once hidden asbestos based insulation and drywall (and other construction materials) to the environment. In the case of man-made disasters like 9/11, the destruction of massive structures like tower one that had tons of asbestos based insulation and drywall posed a high risk to workers at ground zero. Exposure to such large amounts of asbestos dust has the potential to cause disease in a much shorter duration compared to that for workers in factories that use asbestos.

Although asbestos-bearing rocks are generally buried beneath the surface and therefore pose no threat to human health, certain states (namely California, Virginia and New Jersey) and countries like Turkey and Corsica have outcroppings of asbestos-bearing rocks ([www.atsdr.cdc.gov/csem](http://www.atsdr.cdc.gov/csem)). As such, these exposed rocks can be broken up during construction, leading to the release of asbestos fibers into the air. Consequently construction workers can be exposed to asbestos in those areas even though they are not working with asbestos directly. These broken pieces of rocks may also be used in road construction ([www.atsdr.cdc.gov/csem](http://www.atsdr.cdc.gov/csem)) were they will be further crushed or may be disturbed when building roads releasing more asbestos fibers in the process.

Although the use of asbestos has reduced drastically in the West, it still poses a threat to human health there because buildings built prior to the ban are still in existence. Additionally, as long as countries like India, Russia and Canada are still mining and exporting asbestos and developing countries continue consuming asbestos, people are still at risk of developing asbestos related diseases now and in the future because asbestos is still with us.

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