



Gulf Coast Mariners Association

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Report to Congress: COAST GUARD FAILED TO PROTECT MARINERS FROM ASBESTOS

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EXECUTIVE SUMMARY

On September 8, 2004 our Association endorsed and submitted a handwritten complaint by one of our mariners, Mark A. Blackman, jointly to the Chief, Inspection Department, of the Coast Guard Marine Safety Office in Morgan City, LA. and to the Regional Director of the Occupational Safety Administration in Dallas, TX from "GCMA Mariner #70" with this introduction:

"The writer, Mark Blackman, is a member of our Association and, at the time, was an employee of Global Industries Offshore ("Global"). He worked on Global's fleet of offshore supply boats, a self-elevating "liftboat" as an able seaman. His letter cites conditions on several of Global's "lift boats" that are regularly inspected by the Coast Guard.

Seaman Blackman cites asbestos contamination on certain Global vessels resulting principally from work conducted on these vessels both by its crewmembers (i.e., seamen) as well as by shipyard workers in a vessel renovation project conducted at the Marine Industrial Fabricators shipyard in New Iberia, Louisiana under the active supervision of company management personnel. The asbestos containing material was being removed so that the vessels could be made acceptable for sale to another company.

We notified the Coast Guard and OSHA that "The letter seeks an emergency investigation of this issue by either the Coast Guard or OSHA (or both) depending upon which agency has jurisdiction over the vessel and/or the shipyard. It further requests testing of all present and former boat personnel for possible asbestos contamination.

"Please advise us in writing as to your jurisdiction and actions that you plan to take on this matter. Mr. Blackman can provide you with further information. He can be contacted at "

The Coast Guard failed to conduct a meaningful inspection and investigation of the incident and were derelict in their duty to protect the health and welfare of Seaman Blackman, numerous shipmates, and shipyard workers at Marine Industrial Fabricators facility in New Iberia within their inspection zone. The Coast Guard provided a written response a month after our report that did not directly respond to the detailed written report provided by Mr. Blackman but did provide a copy of NVIC 6-87 mentioned below. OSHA responded that, in light of an OSHA/USCG Memorandum of Understanding dated November 11, 1996⁽¹⁾ it could not enforce the OSH Act with respect to seamen on inspected vessels. However, they did express limited interest in shipyard employees who might have been exposed to asbestos fibers. [⁽¹⁾Reprinted as GCMA Report #R-347]

Our Association then proceeded to examine and compare existing regulations and guidelines regarding asbestos in these areas:

- The Occupational Safety and Health Act of 1970.
- OSHA Regulations governing asbestos mitigation and control.
- Coast Guard Policy concerning Asbestos removal activities on Coast Guard vessels and other assets.
- Coast Guard guidelines on Asbestos mitigation on merchant marine vessels.
- GCMA's Asbestos removal policy submitted to TSAC and the Coast Guard.

Conclusions: OSHA Asbestos regulations are comprehensive and would be effective if enforced on all vessels. However, they are only enforceable on uninspected vessels and then only if OSHA receives a written complaint, request for inspection, and if the vessel is actually available at the dock and can be boarded. These conditions rarely exist.

Existing Coast Guard policies in Commandant Notice 6260 are detailed and are enforceable in the military service for which they were written. They should adequately protect Coast Guard personnel at Coast Guard facilities ashore and at sea, ***but not our merchant mariners***.

Coast Guard guidelines in the form of Navigation and Vessel Inspection Circular No. 6-87 (NVIC 6-87) are only recommended practices for control of asbestos and other respiratory hazards and are not enforceable as they are not in the form of federal regulations and ***do not effectively protect our mariners from asbestos*** on inspected vessels.

WHY ARE STATUTES, REGULATIONS, GUIDELINES & POLICIES UNABLE TO PROTECT OUR MARINERS?

Occupational Safety and Health Act of 1970

Section 651, Congressional statement of findings and declaration of purpose and policy, states:

(a) The Congress finds that personal injuries and illnesses arising out of work situations impose a substantial burden upon, and are a hindrance to, interstate commerce in terms of lost production, wage loss, medical expenses, and disability compensation payments.

(b) The Congress declares it to be its purpose and policy, through the exercise of its powers to regulate commerce among the several States and with foreign nations and to provide for the general welfare, to assure so far as possible every working man and woman in the Nation safe and healthful working conditions and to preserve our human resources

In 1973, the Coast Guard and OSHA signed a Memorandum of Understanding⁽¹⁾ dividing their responsibilities in the marine field so as not to duplicate each other's efforts. A second Memorandum signed in 1996⁽²⁾ further clarified this division. However, these memoranda failed to make it a primary responsibility of both agencies to protect the safety and health of all merchant mariners. Although the memoranda may have perfected the relationships between the two agencies, they did ***not*** assure our mariners of safe and healthful working conditions on either inspected or uninspected vessels. The areas that were neglected were far-reaching and are discussed in several other GCMA Reports already brought to the attention of Congress.⁽³⁾ Further, lack of clarity bubbled into the Mallard Bay Drilling Case that had to be decided by the U.S. Supreme Court in 2002 and, in effect, left the matter up to Congress.⁽⁴⁾ We, therefore, bring this matter to Congress since the Coast Guard and OSHA through their inaction and hopelessly divided responsibility, appear unable to protect our mariners. [⁽¹⁾Reprinted as GCMA Report #R-347-A, . *OSHA/USCG Authority Over Vessels*. [OSHA Directive CPL 2-1.20 ⁽²⁾.GCMA Report #R-347. ⁽³⁾GCMA Report #R-349, *Protecting Mariners' Hearing*. GCMA Report #R-300, ⁽⁴⁾*Chao, Secretary of Labor vs. Mallard Bay Drilling, Inc.*]

On August 2, 2007, the House Subcommittee on Coast Guard and Maritime Transportation conducted hearings on Problems Facing the Coast Guard's Marine Safety Programs. In our written testimony we identified reports

previously submitted to Congress showing that areas such as providing safe potable water, workplace hearing protection, and workplace safety on uninspected vessels whose jurisdiction falls between two different Executive Branch agencies often falls between the cracks leaving large groups of workers unprotected..

Our Association clearly expected prompt action by the Marine Safety Office's Inspection and/or Investigations staff. The need was immediate. Mariners were living and working in substandard conditions, grinding asbestos floor tiles, removing lagging from piping in the engine room and creating dust without being furnished respiratory protection, air breathing equipment, clothing protective suits or other equipment normally required during asbestos removal. This was a supervisory responsibility of management governed by explicit regulations requiring personal protective equipment, engineering controls, and professionally trained removal personnel and was all being ignored as if asbestos remediation protection was not prominent in every land-based construction activity.

OSHA Regulations

The OSHA regulations that cover Asbestos fall under Shipyard Employment Regulations at 29 CFR 1915.1001 and cover almost 80 pages. The present regulations date from August 10, 1994 and were last updated on August 24, 2006. They are extremely thorough and complete.

Although these liftboats were being renovated and prepared for sale in a shipyard, and although shipyard workers and other contract labor reportedly were also involved in working on the contaminated vessels, one independent contractor specifically did not want his name mentioned for fear of retribution and loss of future work. Consequently, we could not furnish that name to OSHA when they replied to our letter several weeks later. OSHA clearly was not interested in the health and safety of our mariners because they lay outside their agency-imposed jurisdictional realm of just of "shipyard workers." The idea of working with the Coast Guard and shutting down an unsafe operation apparently never occurred to them. **We believe that the existing Memoranda of Understanding should be redesigned to have agencies of the Federal government work in concert with each other and not serve as an avenue to excuse both agencies from doing their job.**

GCMA experienced the same "bureaucratic inertia" between the Coast Guard and the Department of Health and Human Services over the matter of Potable Water for vessels of less than 1,600 Gross Register Tons.⁽¹⁾ Although we attempted to work with both agencies, our results were to no avail. Consequently, we presented that problem to Congress in 2004 and saw Congress take swift action to clarify which agency was responsible – in that case, the Coast Guard.⁽²⁾ [⁽¹⁾ GCMA Report # R-395, Rev.2. Safe Potable Water and Food Service for Commercial Vessels of Less than 1600 Gross Register Tons: An Appeal To Congress. ⁽²⁾§416, Coast Guard and Maritime Transportation Act of 2004.]

Coast Guard "Policy" on Asbestos Removal Activities on Coast Guard Assets

The Coast Guard has a manual prepared by the Chief, Office of Health and Safety – Commandant Notice 6260.16A. The intended users are all Coast Guard units that have asbestos containing materials within its facility and have **trained asbestos abatement personnel.** – Area and district commanders, maintenance and logistics commands, commanding officers of headquarters units, and chief of staff offices and special staff divisions at Headquarters **shall assure compliance with the provisions of this notice.**

While this notice only applies to Coast Guard personnel, it calls for **trained asbestos abatement personnel** to do asbestos removal work. So do OSHA regulations. Why then are our mariners expected to grind, disassemble and remove Asbestos containing materials from commercial vessels. Why didn't a light bulb light up when they received our fax request at the local marine safety office? This lax treatment must be recognized as a shortcoming of both the inspection and investigation function – and is a **Problem Facing the Coast Guard's Marine Safety Program!**

Coast Guard "Guidelines" on Asbestos Mitigation on Merchant Vessels

The Chief of the Inspection Department, in a letter written more than a month after Mr. Blackman's request for an immediate investigation, **acknowledged the Coast Guard as "the lead in the enforcement federal agency affecting the occupational safety and health of seamen aboard inspected vessels."**

He stated: "The Coast Guard guidance regarding asbestos exposure can be found in Navigation and Vessel Inspection Circular (NVIC) 6-87. This NVIC recommends the use of some OSHA's standards and provides additional guidance as to what action should be taken to reduce overall asbestos exposure." He furnished a copy of the NVIC.

Unlike the OSHA regulations last updated in 2006, this NVIC remains unchanged since 1987. However, unlike the OSHA regulations, a NVIC is only a "guideline" and as such is not enforceable as a regulation would be. The result in this case is that Mr. Blackman and the crew of at least three liftboats were not protected from exposure to

asbestos fibers in order that their employer could save that expense and maximize his profit by exploiting the safety and health of our mariners. **Nobody in the Coast Guard raised a finger to stop the practice!**

GCMA's Asbestos Removal Policy Submitted to TSAC and the Coast Guard.

[Source: GCMA Report #R-276, Rev. 9, Towing Vessels Must Be Regulated Like Every Other Inspected Vessel. Item #55. Our policy was presented to the Towing Safety Advisory Committee in 2001.]

[Applicable Statute: 46 U.S. Code §2103. Coast Guard enforcement on behalf of mariners of applicable provisions of the Occupational Safety and Health Act of 1970, 29 U.S. Code §651 to 678.]

[Comparable Regulations: 29 CFR §1915.1001; 29 CFR §1926.58.]

øMany mariners work on older vessels that still contain asbestos. Any work involving asbestos dust contamination or asbestos removal should be shipyard work done without the assistance of mariners because our mariners do not receive the training or equipment OSHA requires to perform tasks of this nature safely

øOur mariners **expect** the Coast Guard to either adapt OSHA asbestos control regulations through **Incorporation by Reference** procedures in the new towing vessel inspection regulations or draft their own regulations and then enforce them as towing vessels are brought under inspection.

øUnfortunately, the Coast Guard appears to show more concern for its own personnel in the area of asbestos protection than it does for protecting the merchant mariners it is charged with superintending under 46 USC §2103. COMDTNOTE 6260 published in 1996 is a detailed manual that introduces and defines the problem, outlines an asbestos management plan, identifies where asbestos may be found, and describes approved repair, removal and disposal procedures.

øAll of this left our mariners working on towing vessels holding the bag without adequate protection for at least the past 22 years. Our Association received distressing word that employers exposed our mariners to large quantities of asbestos dust on inspected vessels. When GCMA notified the cognizant Coast Guard Marine Safety Office it received no satisfaction and no follow-up.

ø**Action:** We believe the Coast Guard already has adequate statutory authority. We request Coast Guard rulemaking on this issue as it affects towing vessels. Willful or accidental violation of asbestos regulations should obligate the employer for employee medical health monitoring and treatment after exposure.ø(*File #GCM-102*)

Mark Blackman's Report Submitted to GCMA, USCG & OSHA August 23, 2004

[Edited for grammar, clarity, and to protect "Mariner #70" from retaliation.]

Re: Asbestos contamination of Employees with Global Industries Offshore

I have been employed with Global Industries Offshore since June 2001. Since being with this company, I heard numerous employees speak about vessels containing asbestos, but not having knowledge of what damage asbestos can cause the human body until I was sent to school and obtained a notebook from a school named øStarsø located in Maurice, Louisiana. After attending the øStarsø school and becoming aware of some regulations, I asked my supervisors (Mike Homes and Randy Reed) about the vessels possibly containing asbestos. **They both said that no vessel owned by Global contains any asbestos.**

I, and other employees with this company, as well as former employees have been exposed to asbestos on numerous occasions. Our employer had us replacing padding (i.e., lagging) around pipes aboard the vessels in the enginerooms of the vessels, rip up the floor tiles of the vessel.

On or about May 27, 2004, the liftboat POMPANO arrived at Marine Industrial Fabricators Shipyard in New Iberia, Louisiana, and the main topic was for the crew to start ripping out the (asbestos tile) floor in the galley of the **Liftboat Pompano Crew**

1. Mark Blackman, Able Seaman.
2. Mate W.S. (**abbreviation of names of mariners**)
3. Able Seaman P.G.
4. Able Seaman C.J.
5. Mate øSø
6. Captain G.M.
7. Captain T.D.

The General Manager (Mr. Randy Reed) and the Port Engineer (Mr. Timothy Reed) knew of the asbestos

contaminants but still scheduled Coast Guard Inspection for August 1, 2004. The vessel failed the inspection. On August 20, 2004, they ordered the crew to move off the Liftboat POMPANO onto the Liftboat SWORDFISH due to asbestos contamination which they were well aware of before the Coast Guard inspection, but they never attempted to move the boat crew until after the Coast Guard inspection on August 19, 2004.

[GCMA Comment: During this period, the crew was expected to live on the liftboat in the midst of the dust, dirt, and contaminants and were not housed in a motel overnight.]

On August 20, 2004, I was informed by (another Able Seaman) that the crew was ordered to move off the POMPANO onto the SWORDFISH and that over the weekend a "special crew" was being brought in to remove the asbestos material from the vessel. On August 23, 2004, I spoke with the (same Able Seaman) again and he informed me that on the previous day that the crew was allowed to move back on board the vessel. During the removal of the asbestos tile flooring, there were welders working inside the vessel, cutting aluminum from the cabin, cutting the flooring, and we wiped the dust from the cabinets the ceilings. I will provide photographs if necessary of the galley. There was dust in the air conditioner vents, beds, and clothing as well.

Seaman M.B., a former employee of Global Industries Offshore who resigned in June 2004 due to various (allegedly) illegal activities within the company, who presently has a complaint pending before a Federal agency, is very concerned about his possibly receiving asbestos contamination due to activities he performed aboard Global Industry Vessels.

Seaman E.R., a former employee of Global Industries Offshore who was the subject of threats from Captain Paul Miller, Able Seaman Michael Louviere, and General Manager Randy Reed which resulted in Mr. Reed terminating Seaman E.R. on March 11, 2004 for complaining of (allegedly) illegal activities aboard the vessel.

Liftboat SANDSHARK Crew

1. Captain E.C.
2. Captain S.S.
3. Mate S.D.
4. Mate D.D.
5. Able Seaman M.B. (mentioned previously with allegations of illegality)
6. Able Seaman L.J. (similar to M.B., above)
7. Able Seaman "Chuck"
8. Ordinary Seaman "Jeremy"
9. "J.M." (a former employee who was injured)

Liftboat STINGRAY Crew

1. Captain Paul Miller (Recently received Letter of Warning from Coast Guard MSO Morgan City)
2. Captain J.P.
3. Mate S.C. (a former employee at time of this report)
4. Mate R.A. (a former employee at time of this report)
5. Able Seaman Michael Louviere (previously mentioned)
6. Able Seaman, Marrk Blackman.
7. Ordinary Seaman Eric Robinson (a former employee terminated on Mar. 11, 2004 for reporting of alleged illegal activities on M/V STINGRAY)
8. Mate D.C.

Global Industries Offshore had a total of twenty-two (22) liftboats. The two newest ones were the KINGFISH and the SWORDFISH. The other twenty (20) boats were built in the 1970s and 1980s. The company is well aware of the asbestos contamination aboard these vessels, but they feel that the almighty dollar is more important than the health and safety of their employees. I recently received word that the General Manager, Mr. Randy Reed, said that the company is not required to test their employees as long as the contaminants are removed from the vessel. I was also told that once the M/V POMPANO is sandblasted and painted this week, it will set sail for offshore after it passes its Coast Guard Inspection on August 23, 2004.

Please consider this letter a request for an emergency investigation!

Further information revealed that Global Industries Offshore only removed the Asbestos contaminants in order to

sell the vessels, but I am told that so far only twelve (12) liftboats were sold and that the buyer became aware of the contaminants and requested that they be removed before finalizing the sale. This information may not be exact.

Testing (for Asbestos contamination) is needed on all present employees as well as all former boat personnel with Global Industries Offshore.

Sincerely,
s/ *Mark Blackman*

[GCMA Comment: Mark Blackman furnished a list of company contact numbers including office phones, home phones and boat phones that were sent to both OSHA and the Coast Guard.]

[GCMA Comment: Hercules Offshore announced on October 4, 2004 their purchase of the Global liftboat fleet for \$53,000,000. Mr. Randy Reed, former Global manager, is now the President of Hercules Offshore..]

WHAT IS ASBESTOS

[Source: Edited from Wikipedia, Asbestos].

Asbestos is a naturally occurring mineral, distinguished from other minerals by the fact that its crystals form long, thin fibers.

The Greeks termed asbestos the "miracle mineral" as they admired it for its soft and pliant properties, as well as its ability to withstand heat (the word *asbestos*' is derived from a Greek adjective meaning "inextinguishable"). Asbestos was spun and woven into cloth in the same manner as cotton. It was also utilized for wicks in sacred lamps. Romans likewise recognized the properties of asbestos and it is thought that they cleaned asbestos tablecloths by throwing them into fire.¹

Asbestos became increasingly popular among manufacturers and builders in the late 19th century due to its resistance to heat, electricity and chemical damage, sound absorption and tensile strength. When asbestos is used for its resistance to fire or heat, the fibers are often mixed with cement or woven into fabric or mats. Asbestos is used in brake shoes and gaskets for its heat resistance, and in the past was used on electric oven and hotplate wiring for its electrical insulation at elevated temperature, and in buildings for its flame-retardant and insulating properties, tensile strength, flexibility, and resistance to chemicals.

The inhalation of asbestos fibers can cause serious illnesses, including mesothelioma. Since the mid 1980s, many uses of asbestos are banned in many countries.

Deposits of asbestos are found throughout the world. The primary sites of commercial production are: the Commonwealth of Independent States, Canada, Brazil, Zimbabwe, and South Africa. Russia is also indicated in its production.

Health Issues

The first signs of health related concerns associated with Asbestos fibers was likely late 1800s/early 1900s. Asbestos diseases can be seen as early as 10 years after exposure. As such, with asbestos mining, manufacturing and installation in full gear by the late 1800s, it is likely that asbestos related sickness/illness was present and diagnosed, though not named until later in 1900s.

1910-1920. In 1918, a Prudential Insurance Company official notes that life insurance companies will not cover asbestos workers, because of the "health-injurious conditions of the industry".^[20]

1930s. In 1930, the major asbestos company Johns-Manville produced a report, for internal company use only, about medical reports of asbestos worker fatalities.^[20] In 1932, a letter from the U.S. Bureau of Mines to asbestos manufacturer Eagle-Picher stated, in relevant part, "It is now known that asbestos dust is one of the most dangerous dusts to which man is exposed".^[21] In 1933, Metropolitan Life Insurance Co. doctors found that 29 percent of workers in a Johns-Manville plant have asbestosis.^[20] Likewise, in 1933, Johns-Manville officials settled lawsuits by 11 employees with asbestosis on the condition that the employees' lawyer agree to never again "directly or indirectly participate in the bringing of new actions against the Corporation."^[21] In 1934, officials of two large asbestos companies, Johns-Manville and Raybestos-Manhattan, edited an article about the diseases of asbestos workers written by a Metropolitan Life Insurance Company doctor. The changes minimized the danger of asbestos dust.^[21] In 1935, officials of Johns-Manville and Raybestos-Manhattan instructed the editor of Asbestos magazine to publish nothing about asbestosis.^[21] In 1936, a group of asbestos companies agreed to sponsor research on the health effects of asbestos dust, but required that the companies

maintain complete control over the disclosure of the results.^[20]

1940s. In 1942, an internal Owens-Corning corporate memo referred to "medical literature on asbestosis in scores of publications in which the lung and skin hazards of asbestos are discussed."^[22] Either in 1942 or 1943, the president of Johns-Manville said that the managers of another asbestos company were "a bunch of fools for notifying employees who had asbestosis." When one of the managers asked, "do you mean to tell me you would let them work until they dropped dead?" the response is reported to have been, "Yes. We save a lot of money that way."^[23] In 1944, a Metropolitan Life Insurance Company report found 42 cases of asbestosis among 195 asbestos miners.^[24]

1950s. In 1951, Asbestos companies removed all references to cancer before allowing publication of research they sponsor.^[25] In 1952, Dr. Kenneth Smith, Johns-Manville medical director, recommended (unsuccessfully) that warning labels be attached to products containing asbestos. Later Smith testified: "It was a business decision as far as I could understand the corporation is in business to provide jobs for people and make money for stockholders and they had to take into consideration the effects of everything they did; and if the application of a caution label identifying a product as hazardous would cut into sales, there would be serious financial implications."^[26] In 1953, National Gypsum's safety director wrote to the Indiana Division of Industrial Hygiene, recommending that acoustic plaster mixers wear respirators "because of the asbestos used in the product." Another company official noted that the letter is "full of dynamite," and urged that it be retrieved before reaching its destination. A memo in the files noted that the company "succeeded in stopping" the letter, which "will be modified."^[27]

Asbestos as a contaminant

Most respirable asbestos fibers are invisible to the unaided human eye because their size is about 3.0-20.0 μm in length and can be as thin as 0.01 μm . Human hair ranges in size from 17 to 181 μm in width.^[28] Fibers ultimately form because when these minerals originally cooled and crystallized, they formed by the polymeric molecules lining up parallel with each other and forming oriented crystal lattices. These crystals thus have three cleavage planes, just as other minerals and gemstones have. But in their case, there are two cleavage planes that are much weaker than the third direction. When sufficient force is applied, they tend to break along their weakest directions, resulting in a linear fragmentation pattern and hence a fibrous form. This fracture process can keep occurring and one larger asbestos fiber can ultimately become the source of hundreds of much thinner and smaller fibers.

As asbestos fibers get smaller and lighter, the more easily they become airborne and human respiratory exposures can result. Fibers will eventually settle but may be re-suspended by air currents or other movement.

Friability of a product containing asbestos means that it is so soft and weak in structure that it can be broken with simple finger crushing pressure. Friable materials are of the most initial concern due to their ease of damage. The forces or conditions of usage that come into intimate contact with most non-friable materials containing asbestos are substantially higher than finger pressure.

Naturally occurring asbestos

Asbestos from natural geologic deposits is known as "Naturally Occurring Asbestos" (NOA). Health risks associated with exposure to NOA are not yet fully understood, and current federal regulations do not address exposure from NOA. Many populated areas are in proximity to shallow, natural deposits which occur in 50 of 58 California counties and in 19 other U.S. states. In one study, data was collected from 3,000 mesothelioma patients in California and 890 men with prostate cancer, a malignancy not known to be related to asbestos. The study found a correlation between the incidence of mesotheliomas and the distance a patient lived from known deposits of rock likely to include asbestos, the correlation was not present when the incidence of prostate cancer was compared with the same distances. According to the study, risk of mesothelioma declined by 6 percent for every 10 kilometers that an individual had lived from a likely asbestos source.^[29]

Portions of El Dorado county are known to contain natural asbestos formations near the surface.^[29] The USGS studied amphiboles in rock and soil in the area in response to an EPA sampling study and subsequent criticism of the EPA study. The study found that many amphibole particles in the area meet the counting rule criteria used by the EPA for chemical and morphological limits, but do not meet morphological requirements for commercial-grade-asbestos. The executive summary pointed out that even particles that do not meet requirements for commercial-grade-asbestos may be a health threat and suggested a collaborative research effort to assess health risks associated with "Naturally Occurring Asbestos".^[30]

Large portions of Fairfax County, Virginia were also found to be underlain with tremolite. The county monitored air quality at construction sites, controlled soil taken from affected areas, and required freshly developed sites to lay 6 inches of clean, stable material over the ground.^[29]

Asbestos in the environment

Asbestos is in the air we breathe and some of the water we drink, including water from natural sources.^[31] Studies have shown that members of asbestos workers (not the general population) with lung cancer have tens of thousands to hundreds of thousands of asbestos fibers in each gram of dry lung tissue, which translates into millions of fibers and tens of thousands of asbestos bodies in every person's lungs.^[32]

The EPA has proposed a concentration limit of 7 million fibers per liter of drinking water for long fibers (lengths greater than or equal to 5 μm). OSHA (Occupational Safety and Health Administration) has set limits of 100,000 fibers with lengths greater than or equal to 5 μm per cubic meter of workplace air for 8-hour shifts and 40-hour work weeks.^[33]

Other asbestos-related diseases

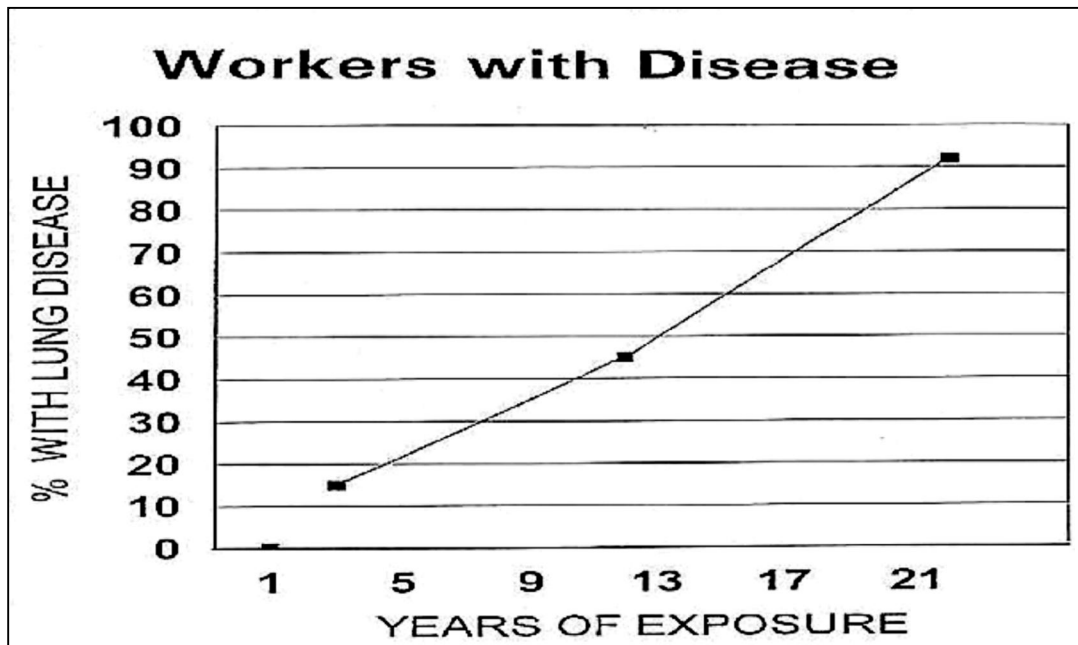
- *asbestos warts* ó caused when the sharp fibers lodge in the skin and are overgrown causing benign callus-like growths.
- *pleural plaques* ó discrete fibrous or partially calcified thickened area which can be seen on X-rays of individuals exposed to asbestos. They do not become malignant or cause other lung impairment.
- *diffuse pleural thickening* ó similar to above and can sometimes be associated with asbestosis. Usually no symptoms shown but if extensive can cause lung impairment.

Litigation

Asbestos litigation is the longest, most expensive mass tort in U.S. history, involving more than 6,000 defendants and 600,000 claimants.^[34] Current trends indicate that the rate at which people are diagnosed with the disease will likely increase through the next decade. Analysts have estimated that the total costs of asbestos litigation in the USA alone is over \$250 billion.^[35]

The volume of the asbestos liability has alarmed the manufacturers and insurance industry. The amounts and method of allocating compensation have been the source of many court cases, and government attempts at resolution of existing and future cases.

Arguably the most notorious environmental polluter in history, W.R. Grace (A Civil Action), again showed its disregard for human health with its failure to make public an internal study conducted by W.R. Grace, subsequent to its purchase of the Libby, MT Asbestos Mine in 1963. The study, *W.R. Grace/Zonolite: Confidential Study of Zonolite/Libby Employees (1969)*, stated "Although 17% of our 1 to 5 years service group have or are suspect of lung disease, there is a marked rise (45%) beginning with the 11 year of service, climbing to 92% in the 21 to 25 years service group. This suggests that chances of getting lung disease increases as years of exposure increase." (see Exhibit 130.4).



Footnotes:

- 20^{a b c d} Barry I. Castleman (1996). *Asbestos: Medical and Legal Aspects*, 4th Edition, Aspen Law & Business. ISBN 1-56706-275-X.
- 21^{a b c d} Paul Brodeur (1985). *Outrageous Misconduct: The Asbestos Industry on Trial*, 1st Edition, Pantheon Books. ISBN 0-394-53320-8.
- 22[^] Barry I. Castleman, *Asbestos: Medical and Legal Aspects*, 4th edition, Aspen Law and Business, Englewood Cliffs, NJ 1996, p.195
- 23[^] .Testimony of Charles H. Roemer, Deposition taken April 25, 1984, Johns-Manville Corp., et al v. the United States of America, U.S. Claims Court Civ. No. 465-83C, cited in Barry I. Castleman, *Asbestos: Medical and Legal Aspects*, 4th edition, Aspen Law and Business, Englewood Cliffs, NJ 1996, p.581
- 24[^] .Barry I. Castleman, *Asbestos: Medical and Legal Aspects*, 4th edition, Aspen Law and Business, Englewood Cliffs, NJ 1996, p.654
- 25[^] Barry I. Castleman, *Asbestos: Medical and Legal Aspects*, 4th edition, Aspen Law and Business, Englewood Cliffs, NJ 1996, p.71
- 26[^] Barry I. Castleman, *Asbestos: Medical and Legal Aspects*, 4th edition, Aspen Law and Business, Englewood Cliffs, NJ 1996, p.666
- 27[^] Barry I. Castleman, *Asbestos: Medical and Legal Aspects*, 4th edition, Aspen Law and Business, Englewood Cliffs, NJ 1996, p.669-70
- 28[^] Physics factbook on asbestos
- 29^{^ a b c} Raloff, Janet (July 8, 2006), *Dirty Little Secret*, <<http://www.sciencenews.org/articles/20060708/bob9.asp>>
- 30[^] Meeker, G.P.; H.A. Lowers & G.A. Swayze et al. (December, 2006), *Mineralogy and Morphology of Amphiboles Observed in Soils and Rocks in El Dorado Hills, California*, <<http://pubs.usgs.gov/of/2006/1362/>>
- 31[^] Centre for disease control article on asbestos
- 32[^] Medscape article on asbestos
- 33[^] Agency for toxic substances and disease registry article on asbestos
- 34[^] American Bar Association article on asbestos litigation
- 35[^] The Economist, January 26, 2005]

Mesothelioma's Cause – Asbestos Exposure

[Source: <http://www.mesotheliomaweb.org/cause>. See our page on mesothelioma risk factors.]

At some point in our lives, nearly all of us have been exposed to asbestos in the air we breathe and the water we drink; from natural deposits in the earth, and from the deterioration of asbestos products around us. Most of us, however, do not become ill as a result of our exposure. More commonly, those who at some point are diagnosed with asbestos disease, have worked in jobs where more substantial exposure occurred over longer periods of time. Nevertheless, cases of mesothelioma have been documented as the result of lesser exposure, affecting family members of workers who came into contact with asbestos and brought it home on their clothing, skin or hair, or affecting those who lived in close proximity to asbestos manufacturing facilities. Symptoms of asbestos disease usually are not be apparent until decades after exposure.

Asbestos was used commercially in North America as early as the late 1800s, but its use increased dramatically during the World War II era when shipyards produced massive numbers of ships for the war effort. Since that time, asbestos-containing products were used by the construction and building trades, the automotive industry and the manufacturing industry. All told, more than 5,000 products contained asbestos.

For more than 50 years, products containing asbestos remained unregulated, and the manufacturers of those products continued to prosper, knowing full well that many of the millions of workers who came into contact with their products would ultimately suffer as the result of their actions. Finally, in the late 1970s, the Consumer Products Safety Commission banned the use of asbestos in wallboard patching compounds and artificial ash for gas fireplaces because the fiber could easily be released during use.

In 1989, the Environmental Protection Agency banned all new use of asbestos, but uses established prior to that time were still allowed. Although awareness of the dangers of asbestos and public concern over the issue have led to a decline in domestic consumption over the years, a total ban on asbestos has not come to fruition. Asbestos is still imported, still used and still dangerous.

Although it is suggested that the number of mesothelioma cases in the U.S. has reached its peak and has begun to drop, a forecast released by the National Cancer Institute's Surveillance, Epidemiology, and End Results Program (SEER), in April, 2003, projected the total number of American male mesothelioma cases from 2003-2054 to be approximately 71,000. This number, however, does not take into consideration events such as the World Trade Center disaster on September 11, 2001, when millions of New Yorkers were potentially exposed to air filled with carcinogenic asbestos particles. When the latency period for asbestos disease is factored in, cases of mesothelioma will continue to be diagnosed for years to come.