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"Ain't Necessarily So!": The Brake Industry's Impact on Asbestos Regulation in the 1970s

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At the end of 2016, the US Environmental Protection Agency (EPA) proposed asbestos, the cause of fibrotic lung disease and cancer, as one of the 10 industrial chemicals to be evaluated under the newly revised Toxic Substances Control Act.[1] Under the new act, a risk evaluation of asbestos is to be completed within three years and, if asbestos is found to be an "unreasonable risk to humans and the environment," the EPA is required to mitigate that risk, possibly through a ban, within two more years.[2]

By 1970, asbestos was used in some 3000 products, such as roof shingles, floor tiles, house siding, ironing boards, and particularly in brakes, among other consumer items. Today, this carcinogenic material is banned in the United States in a few products, including corrugated paper and flooring felt, but it is still legal in brakes and clutches and a host of construction and industrial materials, such as vinyl floor tile, roofing materials, and cement pipe, among others. Consequently, it is in millions of homes, gas stations, and repair shops across the country.[3]

Historians have documented one major reason for the delay in banning this known carcinogen: private industry trade groups stifled earlier efforts at regulation.[4] Here, we look at the specific efforts of one such group, the Friction Materials Standards Institute (FMSI) to forestall the regulation of asbestos used in brakes and clutches, one of the oldest sources of asbestos exposure. We examine the industry's reaction to the newly created Occupational Safety and Health Administration's (OSHA) dramatic reduction of the Permissible Exposure Limit (PEL) in the early 1970s. There is a literature that addresses the current medical and epidemiological evidence of the dangers from asbestos brakes.[5] Here, however, using internal corporate documents, most of which have not been previously reviewed but are now available at toxicdocs.org,[6] we explore what the industry understood about the dangers to mechanics from asbestos.

The concern about asbestos in brakes reflects the broader acknowledgment of the impact of industrial toxins on workers and consumers in the 20th century.[7] In the early 1930s, E. R. A. Merewether identified the dust produced by "the sawing, grinding and turning in the dry state of articles composed wholly or partly of asbestos such as motor car brake and clutch linings" when inhaled as a cause of asbestosis, the fibrotic condition that slowly strangles affected workers.[8] Merewether's early observation that any material that contained asbestos could prove to be a hazard was affirmed in the immediate postwar period, as officials noted that "asbestos has been incorporated into protective clothing, brake linings, cements, and other forms of insulation" and that exposure to asbestos dust caused by "the breakdown of the native mineral" was also associated with cancer of the lung.[9] By the mid-1960s, asbestos was associated with asbestosis, lung cancer, and mesothelioma, a cancer of the lining of the lung and abdominal cavity, leading the British Ford Motor Company to host a conference in 1969 on the possible dangers presented to brake mechanics and those installing or replacing brake linings.[10]

In 1970, the Occupational Safety and Health Act, establishing OSHA and the National Institute of Occupational Safety and Health (NIOSH), was passed.[11] Almost immediately, the FMSI established an Asbestos Study Committee (ASC), which focused on the possible impact of OSHA regulations on brake and clutch manufacturers. Working with the Asbestos

Information Association of North America (AIA), another trade association, it sought to forestall any drastic regulation.[12] Among the ASC's first acts was to meet with OSHA officials who had issued an emergency PEL of 12 fibers per cubic centimeter in 1971 and, a year later, reduced it further to 5 fibers per cubic centimeter, with an even greater reduction to 2 fibers per cubic centimeter by 1976.[13]

ACKNOWLEDGING DANGER (PRIVATELY)

The FSMI was aware of why OSHA was considering this reduction. At its meeting in June 1972, the ASC received a report that Rohl and colleagues had presented a paper at a meeting of the American Industrial Hygiene Association, which was held at Mt Sinai School of Medicine in New York City. According to the ASC, the paper revealed that "the dust concentrations during the blowing off of brakes are in excess of the five fibers per cc [cubic centimeter] allowance."[14] They acknowledged that exposure to asbestos dust was a possibility, if not a probability, for workers installing and replacing brakes.[15]

This raised the question for the ASC as to whether the manufacturers, under the new OSHA regulations, had an obligation to warn workers of dangers they potentially faced.[16] Hence, a new rationale for not warning was developed. they publically pronounced that asbestos, when "locked in" to fabrics, lacquers, plastics, or other finished products, was not a danger as it could not be released into the air.[17] In private, however, the committee members noted that because their products were friction materials, there was an inherent danger in the "handling [by employees] of the products with supposedly locked-in asbestos during drilling, grinding, inspection and boxing." Furthermore, there was the potential for the release of asbestos during "the handling of the brake lining or clutch facing by the customer" even far from the shop floor. One member of the ASC suggested that "a notification be put in boxes in brake linings or clutch facings," but this was quickly shot down when another member objected because "he felt it was another 'red flag' that would bring more harm to the industry than the alleged good that would come from enclosing such notices."[18]

Despite public assurances that using 'locked-in" asbestos was safe, E W Drislane, the executive director of the FMSI, wrote to the ASC about an internal survey that revealed "the problem [that] in many cases subsequent operations will be performed—cutting, grooving, drilling and grinding [and that] these subsequent operations can produce concentrations of asbestos fibers in excess of the current exposure limits."[19] "Most members of the Committee" believed that the OSHA standard was "exceeded in many areas such as inspection, drilling, and grinding where there is not adequate dust collection machinery."[20]

ANTI-COMPETITIVE

In mid-1973, 'Ike" Weaver, an engineer with the Raybestos–Manhattan Corporation and chair of the ASC, gave a major address to the entire membership that provides a summary of what the industry understood about the dangers of asbestos. He informed them about the recent meeting of the International Agency for Research on Cancer at which "the most important item [was] the incrimination of all major types of asbestos as causal agents of carcinoma, particularly mesothelioma." He further warned that "since most of us [in the FMSI] use substantial amounts of chrysotile asbestos in our formulations association of this material with mesothelioma and other types of cancer is of serious concern."[21]

For an industry that identified friction as the primary characteristic of its products, he knew "of no way any of us can be absolutely sure that his friction products, regardless of whether they are sold as original equipment or on the replacement market, [would not] result in excessive exposure



"Look What Makes the Disc Brake Brake." From the 1930s on, sawing, cutting, sanding, or abrading asbestos-containing products in any way was identified as a major concern. Here, we see an "asbestos-based" Johns–Manville disk brake ad from the 1960s with no mention of any potential danger.



Here, we see an asbestos-based Johns Manville disk brake ad from the 1960s with no mention of any potential danger In fact the ad emphasizes the safety" of the asbestos brakes, despite the fact that by this point it was clear that exposure to asbestos dust caused cancer

of workers or bystanders to airborne asbestos fibre." He was "appalled to learn of instances where this problem has occurred."[22]

He objected to those in his industry who argued that most workers were exposed only 'relatively intermittently" to respirable asbestos dust "I say emphatically this just ain't necessarily so!" Not only did "large volume replacement users [perhaps chains such as Midas and Meineke] present major potential hazards," but "even small job shops can needlessly expose people to high fibre concentrations if operations are performed without controls" There was the risk for dread disease even when exposures were minimal or of short duration.[23] "To me," Weaver concluded, "labelling all containers or packagers of asbestos-containing friction material is the very least the industry can do to fulfill its moral obligation to its customers, their employees and the public and at the same time conform with minimum requirements of the Occupational Safety and Health Act."[24]

Further evidence about the potential dangers to mechanics, including cancer, was provided with the publication of the Rohl paper on New York City garages that the ASC had heard about before The ASC acknowledged that "some of the housekeeping conditions in these shops [were] deplorable" And they acknowledged that conditions in New York were "perhaps no worse than in other shops throughout the country."[25]

COLLAPSING DEFENSES

By the mid-1970s, the FMSI had learned that both national and international experts, NIOSH, the International Labor Organization, the International Agency for Research on Cancer, and other researchers agreed that the PEL was irrelevant to the question of cancer.[26] In addition, one of the leading figures in industrial medicine and the leading asbestos researcher, Irving Selikoff, echoed these ideas, writing that the "only safe concentration is zero fiber per cc."[27]

In April 1975, as the date for the proposed reduction of the PEL to 2 fibers per cubic centimeter approached, the FMSI faced a dilemma They claimed they were already 'having difficulty meeting the 5 fibers/cc limit,' and worried that "it would be near impossible to meet the 2 fibers/cc limit due July 1, 1976." Some on the ASC "suggested that the industry should oppose this change,"[28] and Guy Gabrielson, vice president of the Asbestos Information Association, said that the industry should simply reject OSHA's and NIOSH's position.[29]

GROWING PRESSURE, GROWING EVIDENCE

The situation was becoming dire for the FMSI as they faced growing pressure to acknowledge that there was no exposure below which workers could be protected from asbestos-induced cancers The pressure came from NIOSH, the International Labor Organization, and others Selikoff predicted an "epidemic of asbestos related death and disease in years to come" The FMSI Board of Directors was alarmed by the growing consensus that "no known dose level [of asbestos exposure was] 'safe.'" Furthermore, Selikoff and his colleagues were 'actively promoting" the view that the hazards were "associated with asbestos emissions"—specifically to mechanics—"from brake lining wear and from brake service operations".[30]

The pressures became even greater in July 1975, after NIOSH called a meeting in Washington of an automobile company, union representatives, the major asbestos companies, researchers, and a trade association representative.[31] They learned that the medical literature "revealed at least four cases of these rare tumors [mesotheliomas] in persons who were employed in jobs involving automobile brake servicing".[32] The liability dimensions of the problem facing the industry were frightening ' It has been reported that approximately 900,000 persons are employed in such work in the United

States It is recommended that stringent industrial hygiene measure to control exposure be implemented as rapidly as possible"[33] In a separate article, the industry learned that "during brake-lining maintenance and repair, workmen in garages, service stations and brake repair shops are exposed to asbestos and thus may be subject to serious cancer risk Others, at some distance from the repair work, are perhaps subject to the same hazard"[34]

RESISTANCE RAMPS UP

At the same time that these articles were being published, OSHA proposed to reduce the asbestos standard even lower, which the FMSI described as a "drastic reduction"[35] The ASC began to mobilize committee members and the general membership of the FMSI to oppose OSHA's recommendation that the PEL be reduced to 0 5 fibers per cubic centimeter instead of the 2 fibers per cubic centimeter standard that was scheduled to go into effect July 1, 1976 In June, they proposed a three-part strategy First, they intended to educate their membership on how to comply with the 2-fibers per cubic centimeter standard to go into effect in the following month and further to recognize "the impact that will be required to cope with the 0 5 fibre standard, should it be imposed" Second, they planned to oppose the more stringent standard with "every possible means at our disposal" and "to enlighten government officials of what informed members within our industry regard as the complete impracticality of the [proposed] 0 5 standard" Finally, they planned on "cooperating with the Asbestos Information Association and the Institute Office in their response to OSHA on the revised standard," an effort they believed had already borne fruit[36] In the end, the standard would not be reduced until the mid-1980s,[37] and they congratulated themselves and the AIA on forestalling the reduction of the standard The FMSI thanked the AIA for "the outstanding job [they did] in rebutting some of the reasons for OSHA's stringent proposals"[38] The committee bragged that "we have been told that our efforts have been efficacious"[39]

The influence of the asbestos industry can be observed directly by comparing the warnings the FMSI and AIA recommended for gas stations and auto repair shops with those of the government NIOSH in 1976 suggested that a sign be posted at the entrance to the work area of these garages that specifically warned "Asbestos Dust Hazard, Avoid Breathing Dust, Wear Assigned Protective Equipment, Do Not Remain in Area Unless your Work Requires it, Breathing Asbestos Dust May Cause Asbestosis and Cancer"[40] The FMSI and the AIA adopted similar wording, with one crucial difference they did not use the word "cancer" Instead, they adopted OSHA's wording from the 1972 standard[41] "Breathing Asbestos Dust May be Hazardous to Your Health"[42] As a result of the FMSI and AIA's opposition, the lowering of OSHA's PEL was significantly delayed In addition, they trivialized the dangers to workers by not including cancer in their warnings As a result, they belittled and undercut the warnings of NIOSH, Irving Selikoff, and many other scientists that workers were putting their lives at risk by working with products made with asbestos

For policymakers, it is important to understand the tragic history we relate here It took 45 years of work on the part of physicians, laboratory scientists, regulators, and citizens to achieve these monumental victories for public health, but all of this work can be undone if the current administration in Washington follows through on its threats to undercut the EPA and other federal agencies There are few materials in the modern environment that are documented to be as hazardous as asbestos It would be tragic if all this work was to be undone by new lobbying efforts aimed at a new administration and EPA administrator particularly receptive to industry's siren call to deregulate[43] AJPH

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ENDNOTES

1 This revision is now known as the Frank R Lautenberg Chemical Safety for the 21st Century Act

2 Environmental Protection Agency, "News Releases From Headquarters EPA Names First Chemicals for Review Under New TSC A Legislation, Agency Answers Call to Move Forward on Chemical Reform Naming Asbestos Among the First to Undergo Risk Evaluation November 11, 2016 https //www epa gov /newsreleases/epa-names-first-chemicals-review-under new-tsca-legislation (accessed December 29 2016)

3 Environmental Protection Agency, "US Federal Bans on Asbestos" https // www epa gov /asbestos/us-federal-bans asbestos#anim-content (accessed December 29, 2016) See also Kathleen Ruff, "Asbestos Lobby Launches Attack to Undermine Upcoming UN Conference on Trade in Hazardous Substances" http //www rightcommunity ca/?p=3963 (accessed April 17, 2017)

4 See, for example Barry Castleman, *Asbestos Medical and Legal Aspects* 3rd edition (Englewood, NJ Prentice Hall 1990), Gerald Markowitz and David Rosner ' Unleashed Upon an Unsuspecting World' The Asbestos Information Association and Its Role in Perpetuating a National Epidemic' *American Journal of Public Health* 106 no 5 (2016) 834–840

5 See Castleman, *Asbestos* pp 443–47[4], for one of the first reviews of the existing scientific evidence of the dangers of asbestos in brake linings

6 These documents are available on the Web site toxicdocs org a collection of nearly 6000000 corporate memos studies letters, and notes gathered through a variety of law suits over toxic materials

7 David Rosner and Gerald Markowitz 'A "Gift of God"? The Public Health Controversy Over Leaded Gasoline During the 1920s," *American Journal of Public Health* 75, no 4 (1985) 344–352 William Graebner, Hegemony Through Science Information Engineering and Lead Toxicology, 1925–1965," in David Rosner and Gerald Markowitz eds, *Dying for Work Workers' Safety and Health in Twentieth Century America* (Bloomington, IN Indiana University Press, 1987), 140–159, David Egilman and Marion Billings, 'Abuse of Epidemiology Automobile Manufacturers Manufacture a Defense to Asbestos Liability,' *International Journal of Occupational and Environmental*

Health 11 (2005): 360–371; Castleman, Asbestos; Anthony J. Lanza, ed. *Silicosis and Asbestosis* (London, UK: Oxford University Press, 1938), 419. See also S. B. McPheeters, "A Survey of a Group of Employees Exposed to Asbestos Dust," *Journal of Industrial Hygiene and Toxicology* 18 (April 1936), 229, he summarized the problem created by "the dangerous dust diseases, silicosis and asbestosis," writing that "while it [currently] employs a relatively small number of persons, the asbestos industry has had a remarkably rapid expansion … by reason of the widespread and varied uses of this products which includes [sic] matches filter pads, paints, roofing, high pressure jointing, electrodes, brake linings, clutch rings … and insulating material."

8. [E. R. A. Merewether], "Memorandum on the Industrial Diseases of Silicosis and Asbestosis," (London: His Majesty's Stationary Office, 1932), p. 12, https://www.toxicdocs.org

9. "Wartime Operations Emphasize Industrial Hygiene Problems of Asbestos Industry," *Illinois Labor Bulletin* 3 (1943): 10–11. See also V. J. Cistrop, "Fume and Dust Exposure," *National Safety News* 57 (February 1948): 20–21, 52, 73–79; H. Wyers, "Asbestosis," *Postgraduate Medical Journal* (December 1949): 631–638; "Asbestosis and Cancer of the Lung," *Journal of the American Medical Association* 140 (August 13, 1949): 1219–1220; Richard Doll, "Mortality From Lung Cancer in Asbestos Workers," *British Journal of Industrial Medicine* 12 (1955): 81–86; "Hygienic Guide Series," *American Industrial Hygiene Association Journal* 19 (1958): 162.

10. E. Hickish, "Exposure to Asbestos During Brake and Clutch Maintenance," *Annals of Occupational Hygiene* 13 (1970); I. D. E. Hickish and K. L. Knight, "Exposure to Asbestos During Brake Maintenance," *Annals of Occupational Hygiene* 13 (1970): 20–21.

11. L. Leopold, *The Man Who Hated Work and Loved Labor: The Life and Times of Tony Mazzocchi* (White River Junction, VT: Chelsea Green Publishing, 2007).

12. Friction Materials Standards Institute (FMSI), *Bulletin No. 406*, "Asbestos Study Committee," ca. 1975. All of the FMSI documents were attained through discovery proceeding in a variety of asbestos lawsuits, in some of which we participated, and we are making all of them available at https://www.toxicdocs.org

13. FMSI, "Asbestos Study Committee Minutes," February 10, 1972; Markowitz and Rosner, "Unleashed Upon an Unsuspecting World."

14. FMSI, "Asbestos Study Committee, Minutes," June 14, 1972.

15. FMSI, "Asbestos Study Committee, Minutes," August 17, 1972.

16. Title 29, Labor, Chapter XVII—Occupational Safety and Health Administration, Department of Labor, Part 1910—Occupational Safety and Health Standards, "Standard for Exposure to Asbestos Dust," *Federal Register* 37 (1972): 11321. "Caution Labels shall be affixed to all raw materials, mixtures, scrap, waste, debris, and other products containing asbestos fibers or to their containers, except that no label is required where asbestos fibers have been modified by a bonding agent, coating, binder, or other material so that during any reasonably foreseeable use, handling, storage, disposal, processing, or transportation, no airborne concentrations of asbestos fibers in excess of the exposure limits prescribed in paragraph (b) of this section will be released."

17. Ibid., p. 11319. "Employers in general strongly contend that finished products that effectively entrap asbestos fibers, so that these would not be released in the normal use of the products, should not be required to be labelled."

18. FMSI, "Asbestos Study Committee, Minutes," August 17, 1972.

19. E. W. Dinslane to Asbestos Study Committee, "Interpretation of OSHA Labelling Requirements," November 6, 1972.

20. FMSI, "Asbestos Study Committee, Minutes," February 16, 1973.

21. FMSI, "Annual Meeting, "Minutes," June 27–28, 1973. Weaver noted that "risk is greatest with crocidolite, less with amosite and apparently still less with chrysotile."

22. FMSI, "Annual Meeting, "Minutes," June 27–28, 1973.

23. Ibid.

24. Ibid.

25. FMSI, "Asbestos Study Committee, Minutes," June 14, 1974.

26. The International Labor Organization's "Meeting of Experts on Safe Use of Asbestos" stated that "the 2 fibres/ml standard should be regarded as an interim concentration related to fibrogenic effects and not to carcinogenic effects, for which no standards exist at the present time." See Report of International Labor Organization, "Meeting of Experts on Safe Use of Asbestos," in Geneva, December 11–18, 1973, in "Asbestos Study Committee Report," June 1974, attached to Minutes of Annual Meeting, June 18–19, 1975.

27. FMSI, "Board of Directors, Minutes," June 25, 1974.

28. See also FMSI, "Asbestos Study Committee, Minutes," April 28, 1975.

29. See Gerald Markowitz and David Rosner, "Unleashed on an Unsuspecting World," The Asbestos Information Association and Its Role in Perpetuating a National Epidemic," AJPH, 106(May, 2016), p. 838.

30. FMSI, Board of Directors, "Minutes," June 17, 1975, "Asbestos Study Committee Report," June 1975.

31. Department of Health, Education and Welfare, CDC, NIOSH, "Minutes of Occupational Exposures to Asbestos Dust From Brake Linings Meeting," July 21, 1973.

32. Department of Health, Education and Welfare, CDC, NIOSH, "Minutes of Occupational Exposures to Asbestos Dust From Brake Linings Meeting," July 21, 1973. See also J. William Lloyd, NIOSH, to "Dear Colleague," "Current Intelligence Bulleting 5 Asbestos Exposure During Servicing of Motor Vehicle Brake and Clutch Assemblies," DHHS (NIOSH), Publication No. 78-127, August 8, 1975 (in FMSI file). At the meeting Dr. George Wright, representing the Johns Manville Corporation, "emphasized that manufacturers have a responsibility to ascertain what happens to their products after being sold to others." He was not surprised about "the [high] fiber counts reported" and expressed the belief that one might subsequently encounter the full spectrum of asbestos-related disease among grinders.

33. Arthur N. Rohl, Arthur M. Langer, Mary S. Wolff, and Irving Weisman, "Asbestos Exposure During Brake Maintenance and Repair," *Environmental Research* 12 (1976): 110–128. In this paper, the authors describe the work practices in repair shops and the attendant hazards. "When a vehicle is brought into a repair shop for brake lining inspection or replacement, the wheel is removed and loose dust is removed from the drums and back plates, generally by means of a compressed air jet. The cloud of dust that is produced is visible for several minutes afterwards. Table 3 shows that fiber concentrations are high in the operator's area under these conditions (an average concentration of 16 fibers/ml), and that there are significant concentrations at least 20 ft. away. … It is evident that any person 65–75 ft. away can be exposed" (p. 118). "It was generally found that there was minimal, if any, effort to control dust in most garages. Workmen do not use respiratory protection. There was little awareness of the potential hazard of brake dust" (pp. 117–118).

34. Arthur N. Rohl, "Asbestos Exposure During Brake Lining Maintenance Repair," ca. January 1976, enclosed in Schlkoff to Dinslane, January 14, 1976. Rohl says in a handwritten note, "Dr. Schlkoff has asked me to send you the results of our asbestos fiber counts during brake repair work." (This reference is to the early draft of paper published in mid-1976).

35. Asbestos Study Committee, FMSI, "Minutes of Annual Meeting," June 16–17, 1976.

36. "Asbestos Study Committee Report," June 2, 1976.

37. See US Department of Labor, Occupational Safety and Health Administration, "Occupational Exposure to Asbestos," Final Rules, 29 CFR Parts 1910, 1915, and 1926, Final Rule for a more complete review of the unfolding attempts at lowering the PEL in construction and other industries. https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=FEDERAL_REGISTER&p_id=13404 (accessed January 17, 2017).

38. Asbestos Study Committee, FMSI, "Minutes of Annual Meeting," June 16–17, 1976.

39. Asbestos Study Committee Report," June 2, 1976.

40. NIOSH, "Recommended (Interim) Procedures for Asbestos Brake and Clutch Servicing," enclosed in FMSI, Bulletin No. 581, October 12, 1976.

41. Markowitz and Rosner, "Unleashed Upon an Unsuspecting World," p. 837.

42. AIA, "Recommended Procedures for Reducing Asbestos Dust During Brake Servicing," ca. September 1976 (these were sent out by the FMSI on February 23, 1977).

43. Hearings on the Nomination of Attorney General Scott Pruitt to be Administrator of the US Environmental Protection Agency Before the Senate Committee on Environment and Public Works, 115th Cong., 1st Sess. (2017). Transcript pw 011817.pdf available at https://www.epw.senate.gov/public/index.cfm/2017/1/hearings-on-nomination-of-attorney-general-scott-pruitt-to-be-administrator-of-the-u-s-environmental-protection-agency (accessed July 17, 2017).