PLAINTIFF'S EXHIBIT

B&R-283

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

CDC, NIOSH

Minutes of Occupational Exposures to Asbestos Dust From Brake Linings Meeting

July 21, 1973

Attendees

See Attached

Proceedings

Dr. John F. Finkles, Director of NIOSH, welcomed the attendees. He stated that the purposes of the meeting were (1) to consider preliminary data on asbestos exposure among brake lining workers and (2) to discuss a future course of action based on this preliminary information. Dr. Finkles then turned the meeting over to Dr. Irving Selikoff of Mount Sinai for presentation of some of his work on this problem.

Dr. Selikoff described the background for our current concern. The health effects of asbestos are well known. However, the health hazards associated with asbestos in brake linings until recently has received little attention. It was thought that the intense heat generated from braking modified the asbestos and that brake lining dust contained insignificant amounts of asbestos fibers. Dr. Mancuso in 1973 did describe asbestos-related health effects in the manufacturing of asbestos for brake linings but apparently this caused little concern. In 1973, a case of mesothelioma was reported in a brake repair worker. This stimulated a re-examination of the problem. Dr. Selikoff consulted with Mr. Meyers of UAW, Mr. Cafalo of [illegible] and the Ford Motor Company and the group at Mt. Sinai initiated a study to determine if brake lining workers were exposed to significant levels of asbestos.

Dr. Selikoff introduced Dr. Langer of Mt. Sinai who reviewed the composition of brake linings and the breakdown products thought to occur from heat generated during braking. Previous studies did not demonstrate asbestos fibers in the amounts or prevalence as indicated by the current studies at Mt. Sinai. However, recent studies at Mt. Sinai demonstrated typical chrysotile asbestos fibers along with a wide range of other forms of crystalline and fibrous materials. He emphasized that the composition of brake linings may differ, for example, brake linings in the U.S. and Great Britain and products here in the U.S. may have undergone many changes over the years. This is particularly important since recent data show that [illegible] of the new car market is made up of these imports. Further research is needed to characterize the asbestos

content of past and present dust exposure. It should be recognized also that the health effects of other materials in brake dust have not been studied.

Dr. Rohl from Mt. Sinai reported on studies of asbestos dust exposure in automobile repair shops in New York City. Peak exposures (over 5-8 minutes duration) were measured. Fiber counts, using a phase contrast method, were from 4 to 37/ml at 2-5 feet from brake drums cleaned with compressed air. At 5-10 feet, counts range from 2 to 4 f/ml at 1-20 feet 1.4 to 4.3/ml. Drums cleaned with a brush generated less airborne asbestos, 1.3-3.6 fibers/ml in the operators breathing zone. Eight to 99% of the fibers as observed by electron microscopy were less than 1.5 microns in length, indicating a much higher exposure to asbestos fibers than indicated by optical microscopy. Workers engaged in grinding operations to cover brake linings were exposed to 2-7 optically visible fibers/ml. Those bevelling linings had high exposures ranging from 11-72 fibers/ml. Dr. George Wright pointed out that earlier studies showed that 1 to 3% of brake dust is fibrous asbestos.

Dr. Lorimer of Mt. Sinai reported on medical examination of 3 brake repair workers with 17-40 years of exposure. A substantial number were reported to have X-ray and ventilatory function abnormalities. Further studies need to be done in this area before any conclusions on health effects can be drawn. However, it was pointed out that to date four cases of mesothelioma have been reported nationally among automobile repair workers and this lends urgency to the problem.

Dr. Finklea asked for comments and recommendations for addressing the problem.

Mr. Meyers suggested that several practical control measures are feasible now. Indeed, these measures have been instituted in several shops. His union alerted its members via its newsletter and guidance posters to alert workers to the problem. Mr. Meyers commented that the employers with whom he worked were most cooperative. Employers were encouraged to use vacuum cleaning of brake drums and, where necessary, masks to reduce exposure. His union has made arrangements for continued medical evaluation of its workers. He emphasized the importance of union representatives having access to workplaces for observation of sanitary practices.

Dr. George Wright, an industrial consultant, emphasized that manufacturers have a responsibility to ascertain that hazards in their products after being sold to workers. This problem represents a difficult problem for the manufacturer and for their industrial customers. Dr. Wright stressed belief that the asbestos industry should cooperate in every possible way. Dr. Wright was not totally surprised by the brake drums rumored and commented the belief that one might substantially encounter the full spectrum of asbestos-related disease among brake [illegible]. Dr. Wright expressed concern that conditions might be worse [illegible]

exposures higher among some smaller businesses. Mr. Wright cautioned that the influence of fiber size should be considered and that any extrapolation to the general population be made with caution. He urged that any subsequent investigations utilize the ICDC classification and the inclusion of negative controls. Dr. Wright cautioned against over-interpreting the occurrence of four mesothelioma cases.

Mr. Samuels of IUD urged that NIOSH:

— Notify the Department of Labor about this problem;

— Make minutes of this meeting available to public along with a suitable press release;

— Notify other involved unions;

— Institute an appropriate national sampling program;

— Institute a program of surveillance and intervention.

Other unions involved include:

— United Auto Workers

— Teamsters

— American Federation of Government Employees

— Allied Industrial Workers

— Laborers International

— International Association of Machinists

— American Postal Workers Union

— United Rubber Workers

— Amalgamated Transit Union

— Transport Workers Union of America

— United Transportation Union

Mr. Samuels of IUD urged that everyone be informed of existing, easily available control measures. Mr. Samuels suggested that research on control technology be built upon their asbestos safety bulletins.

Mr. Angelo Cefalo of LVI requested the need to inform affected locals and union members in an orderly fashion. Mr. Cefalo stated that

the needed research program should be planned and funded. He offered his assistance in obtaining any needed support for this program.

Dr. Mancuso of the University of Pittsburgh at the request of the International Association of Machinists conducted a pilot study of death records and identified in 1973 a mesothelioma case (proven by autopsy) of a garage mechanic and another case of pleural mesothelioma in a millright who was blowing out asbestos, friction-type clutches with compressed air at a paper company. Dr. Mancuso felt the nature of the death records was such that other cases of mesothelioma may exist but are unrecognized. He spoke of the need to use this opportunity to develop an effective industrial medical surveillance system.

Herb Northrop of Ford asked that any alert bulletin place this problem in perspective — pointing out other recognized exposures to asbestos.

John Dement of DPSCI presented preliminary data from a NIOSH study showing peak exposures of up to 5 fibers/ml during brake drum blowing. He also showed peak lead levels of approximately 4.5 mg/M3 during blowing operations. NIOSH electronmicroscopic studies of brake drum dust also showed a predominance of small asbestos fibers with most fibers being less than 1 micrometer in length. At a plant removing lined brake shoes, exposures of 2[illegible] fibers/ml (during grinding) and [illegible] of up to 10 fibers/ml during emptying of a drum containing old linings were observed.

Dr. Weaver of API offered to communicate with gasoline stations and he supported further studies of the problem and emphasized the need to use appropriate controls of NICC film reading techniques.

Ed Alpaugh of International Harvester urged preparation of a joint release. Paul Toth of Ford offered to help with suggestions on control technology and in disseminating information from NIOSH on this matter to appropriate Ford Motor Company dealer relations personnel.

John Moran of EPA pointed out that disc brakes release more asbestos into the general environment than shoe brakes. He stated that the EPA expressway roadside study could look at asbestos levels along a gradient away from the expressway. Dr. Selikoff pointed out that braking, itself, may be important [illegible] that roadside studies should consider the effect of braking.

Dr. Mancuso was asked to comment on the needed health studies. He suggested an epidemiology study of the mortality experience of a cohort of unionized workers and their families. He emphasized need for extreme care in the experimental design. He thought such a study [illegible] for other cancers and occupational respiratory diseases [illegible] asbestos-related disorders.

It was emphasized that workers were exposed to metals, plastic dusts (body shops), solvents and toxic gases like carbon monoxide. Dr. Mancuso recommended clinical studies in the same population of workers. He especially requested evaluation of so-called "nuisance dusts" which he claims may be more harmful than now realized. He emphasized need to look at workers who left the industry as well as those who are still employed.

Mr. Toth stressed the need to ascertain the role of tobacco smoking in any studies. Others agreed with him. Dr. Mancuso took exception to the undue emphasis on the smoking aspects, to the exclusion of proper recognition of the magnitude of inherent health risks due to the chemicals in dusts of the working environment.

Dr. Selikoff suggested seven areas for urgent study:

— Analysis of brake materials utilized since 1940 using literature survey and laboratory analysis (EPA/NIOSH).

— Broad based national industrial hygiene survey to assess exposures for various occupational tasks (NIOSH/OSHA).

— Epidemiologic studies of mortality experience of exposed workers from several sources (NIOSH). He suggests this receive the highest priority.

— Further clinical studies of 1,000 workers including suitable controls (NIOSH).

— Autopsy survey of lung asbestos burden of exposed workers in auto maintenance industry (NIOSH).

— Industrial hygiene measures to better control exposure (Joint effort of unions, industry and NIOSH).

— Education of workers to hazard and to use control measures (DOL/NIOSH).

Dr. Selikoff suggested that there be no delay in getting this program underway.

Dr. Joe Wagoner of NIOSH generally supported the discussed research program. He emphasized need for careful characterization of exposures to agents other than asbestos and the need to ensure that if the research funds are used to answer some of our major remaining scientific questions about the effects of exposure to relatively low levels of short asbestos fibers. William Best of NRI offered his assistance. He asked whether or not a case-control study might be of some help.

Attendees

Name	Affiliation
Edward Krauch	International Harvester Company
Edward J. Baier	NIOSH
Otto A. Bessey, M.D.	Mt. Sinai
William Best, M.D.	National Cancer Institute
Hector Blejer, M.D.	NIOSH
Kenneth Brilliard, M.D.	NIOSH
Jack Butler, M.D.	NIOSH
Angelo DeFalo	International Association of Drilling
John M. Dement	NIOSH
John F. Finkles, M.D.	NIOSH
Arthur Langer, M.D.	Mt. Sinai
William Lorimer, M.D.	Mt. Sinai
Thomas F. Mancuso, M.D.	University of Pittsburgh
Samuel Nevers	Local 23 , UAW
John Moran	EPA
Herb Northrop, M.D.	Ford Motor Company
Arthur Rohl, M.D.	Mt. Sinai
Sheldon Samuels	EPA/OTS-OTS
Irving J. Selikoff, M.D.	Mt. Sinai
Paul E. Toca	Ford Motor Company
Joseph Wagoner, S.D. Hyg.	NIOSH
Neill Weaver, M.D.	American Petroleum Institute
George W. Wright, M.D.	Johns-Manville

1910.1001 Asbestos

A. Definitions

1. Asbestos - includes chrysotile, amosite, crocidolite, tremolite, anthophyllite, actinolite.

2. Asbestos Fibers - Longer than 5 μ

B. Permissible Exposure to Airborne Concentrations

1. July 7, 1972 - 5 fibers/cc 8 hour TWA

2. July 1, 1976 - 2 fibers/cc 8 hour TWA

3. Ceiling Concentration - 10 fibers/cc

C. Methods of Compliance

1. Engineering Methods

a. Engineering Controls - isolation, enclosure, exhaust ventilation, dust collection.

b. Local Exhaust Ventilation - ANSI Z9.2-1971

c. Particular Tools - All hand-operated and power-operated tools shall be provided with local exhaust ventilation systems.

2. Work Practices

a. Wet Methods - use when feasible

b. Particular Products and Operations - No asbestos cement, mortar, etc., shall be removed from containers without being either wetted, enclosed or ventilated to prevent release of fibers above standards.

c. Spraying, Demolition or Removal - Employees involved in these processes shall be provided with respiratory equipment and with special clothing.

D. Personal Protective Equipment

1. Compliance may not be achieved by the use of respirators or shift rotation of employees, except:

a. During time period installing engineering controls and to institute the work practices required.

b. Where work practices are not technically feasible or feasible to an extent insufficient to reduce the airborne concentration below the limits.

c. In emergencies.

d. Where the above three are allowed person rotation shall be used before respirators.

2. Respirators shall be NIOSH/MESA Approved.

a. Air purifying respirators - use when levels are no more than 10 times limits.

b. Powered air purifying respirators - 10 times 100 times limits.

c. Type C supplied-air respirators - 100 times limits.

d. Establishment of a respirator program

1. ANSI Z88.2-1969 1910.134

2. Where to get ANSI

3. No assignment if physician determines employee cannot function normally wearing a respirator or health impaired must rotate him to another job.

3. Special Clothing - shall provide and require use of special clothing (coveralls, head coverings, gloves and foot coverings) to employee which exceed ceiling level.

4. Change Rooms

a. At any fixed place of employment exposed in excess of limits, the employer shall provide change rooms for employees working regularly at the place.

b. Clothes Lockers - shall provide two seperate lockers or containers for each employee seperated to prevent contamination of work and street clothes.

c. Laundering

1. Shall be done so as to prevent release of fibers in excess of limits.

2. Shall inform the laundress of asbestos presence and limits.

3. Contaminated clothes transported in sealed bags or containers and labeled.

E. Method of Measurement - All determinations shall be made by the membrane filter method at 400-450X (magnification) (4 millimeter objective) with phase contrast illumination.

F. Monitoring

1. Initial Determinations - Every employer shall cause every place of employment where asbestos fibers are released to be monitored in such a way to determine whether every employee's exposure is below the limits.

2. Personal Monitoring

a. Breathing zone samples on membrane filters of 0.8 u mounted in an open face filter holder. Determine 8 hour TWA and ceiling values.

b. Sampling frequency and patterns - In no case shall sampling be done at intervals greater than 6 months for employees whose exposure may reasonably be foreseen to exceed the limits.

3. Environmental Monitoring

a. Areas representing exposure which may reach employees.

b. 6 months limits

4. Employee Observation of Monitoring - shall be allowed to observe monitoring and records.

G. Caution Signs and Labels

1. Caution Signs

a. Posting - Provided and displayed in area where concentration may be in excess of limits. Must give employee time to protect himself. Signs shall be posted at all approaches to areas containing excessive exposure.

b. Sign Specifications - Shall conform to the requirements of 20" x 14" vertical format signs 1910.145(d)(4)

2. Caution Labels

a. Labeling - Caution labels shall be affixed to all raw materials, wastes, etc., containing asbestos fibers not bonded.

b. Label Specifications.

H. Housekeeping

1. Cleaning - All external surfaces shall be maintained free of accumulations of asbestos fibers.

2. Waste Disposal - Asbestos waste consigned for disposal which may produce through Handling concentrations of asbestos fibers in excess of exposure limits, shall be collected and disposed of in sealed impermeable bags or containers.

I. Recordkeeping

1. Exposure Records - Every employer shall maintain records of monitoring for at least 3 years. Available to OSHA, NIOSH.

2. Employee Access - Employee shall have reasonable access to records.

3. Employee notification - any employee found to have been exposed at any time to asbestos above the limits shall be notified in writing of the exposure not later than 5 days of the finding. Also, notified of the corrective action being taken.

J. Medical Examinations

1. General - Employer shall provide medical examinations relative to exposure to asbestos.

2. Preplacement - Employer shall provide to each of his employees within 30 days following his first employment in an occupation exposed to airborne concentrations of asbestos fibers, a comprehensive medical examination which shall include, as a minimum, a chest roentgenogram (post-ant 14" x 17"), a history of respiratory diseases, and pulmonary function tests to include force vital capacity and forced expiratory volume at 1 sec.

3. Annual Examinations - Annually, every employer shall provide or make available comprehensive medical examinations to each of his employees engaged in occupations exposed to airborne concentrations of asbestos fibers. Shall include the minimum of a chest roentgenogram (14" x 17"), history of respiratory diseases and pulmonary function tests to include force vital capacity and forced expiratory volume at 1 sec.

4. Termination of Employment - within 10 days before or after termination of employment shall have the same minimum tests as above.

5. Recent Examinations - No medical exam is required of any employee if adequate records show that the employee has been examined within the past 1-year period.

6. Medical Records

   a. Maintenance - maintain complete and accurate records of all medical examinations. Records shall be retained by employers for at least 20 years.

   b. Access - records shall be made available to OSHA and NIOSH.