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Department of Health, Education, and Welfare

CDC, NIOSH

Minutes of Meeting on Occupational

Exposure to Asbestos Dust During Brake and

Clutch Servicing

Cincinnati, Ohio

March 19, 1976

Minutes Prepared By

John Dement

Attendees

See Attachment

Proceedings

Dr. Bobby Craft, Acting Director, Division of Surveillance, Hazard Evaluations and Field Studies, NIOSH welcomed the attendees. Dr. Craft stated that the purposes of the meeting were (1) to review the data available concerning asbestos fiber exposures during brake and clutch servicing (2) to explore the research potential for further epidemiological studies of garage mechanics and the significance of such studies with respect to asbestos disease etiology (3) to discuss what further course(s) of action NIOSH should take to assure minimum asbestos exposures to garage workers. He then asked Dr. Irving Selikoff to summarize current knowledge concerning asbestos exposures to garage mechanics and related health effects.

Dr. Selikoff briefly summarized environmental and medical studies conducted with Local 259 of the United Auto Workers and the New York Automobile Dealers Association. These studies demonstrated peak asbestos fiber exposures of 0.5 to 35 fibers/cc as determined by the standard OSHA phase contrast counting method. Using electron microscopic techniques, it was shown that 80 to 99% of the fibers were shorter than 5 μm in length. Medical examinations of 93 brake repair workers with 10-40 years of exposure demonstrated a substantial number with x-ray and pulmonary function abnormalities. Dr. Selikoff estimated that more than one million workers are potentially exposed to friction product wear dusts. He also presented data showing that in 1920 there were approximately eight million vehicles on the roads; however, in 1974 this number

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had increased to approximately 130 million.

Dr. George Wright, industrial medical consultant, pointed out that many garage mechanics perform grinding operations in addition to cleaning of the brake wear dusts. These workers would be exposed to longer fibers and thus would be expected to demonstrate the full spectrum of asbestos related diseases. Dr. Wright suggested the following points be considered with respect to future studies of brake mechanics:

1) A cohort should be established exposed solely to the dust released from "used" brakes by blowing or brushing. These dusts contain broken down fibers, resins, etc. Fibers present in these dusts are largely shorter than 5 μm with some proportion altered to an amorphous fibar. Such a study, if properly conducted, could answer questions concerning the significance of exposures to brake wear dusts and the biological significance of short versus long asbestos fibers.

2) Since only chrysotile has been used for asbestos brake linings, a study of brake mechanics would provide an opportunity to study industrial (as opposed to mining and milling) chrysotile exposures with respect to the development of mesothelioma. Dr. Wright suggested that low priority be given to anything other than a mesothelioma survey.

3) A careful, sophisticated study of brake cleaning methods and work practices should be conducted to determine the optimum work practices for reducing exposures.

Dr. Wright stated that in his opinion the chances of designing a study to determine does-response relationships is minimal.

Dr. Craft asked the group to consider the possibility of defining a suitable cohort exposed solely to brake lining wear dust (short fibers) for purposes of health studies.

Mr. John Marsh, Raybestos-Manhattan Incorporated, presented data showing the number of workers in various types of garages. These data were as follows:

Garage Type	Approx. # Facilities	Av. # Mechanics Per Shop	% of All Brake Work Performed
Service Stations	195,000	2.5	50%
Independent Garages	108,000	2.7	30%
New Car Shops	39,000	5.7	18%
Fleet Shops	21,000	7.6	1-2%

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Mr. Lou Reff, J.C. Penney, presented data concerning asbestos fiber exposures in 360 facilities operated by J.C. Penney. Mr. Reff indicated that, using a solvent washing technique, a zero fiber exposure (phase contrast counts) could be obtained. Small exposures could be detected with sloppy work practices. He indicated that sampling of the ambient air outside of the garage facility was done to obtain background levels.

John Dement of NIOSH presented preliminary data concerning time-weighted-average asbestos to garage brake mechanics. These data showed time-weighted-average exposures to be generally below 0.2 fibers/cc (phase contrast counts) even when using compressed air blowing techniques. However, exposures up to 10 fibers/cc were observed in one facility grinding new linings. He indicated the need to take these exposures into account when defining a population for an epidemiologic study. Mr. Dement also indicated that NIOSH electron microscopic studies of brake wear dusts demonstrated most fibers to be less than 0.5 μm in length. Mr. Dement requested data from attendees concerning present and past use of new lining grinding methods.

Messrs. Jacoby and Thacker, Delco-Moraine, indicated that radius grinding in the garage should no longer be a common practice. Most manufacturers are presently "crown grinding" new linings thus eliminating this practice in garages.

Dr. Selikoff addressed the problem of defining a cohort exposed only to short fibers. He suggested the possibility of choosing garages in approximately six large cities for study. Large shop employees, municipal employees and taxi fleet workers could provide a large and stable work force. In addition to medical studies of garage employees, Dr. Selikoff suggested studies of the mineralogy of wear dusts, studies of worker asbestos lung burden and animal inhalation experiments.

John Marsh indicated that informing garage mechanics of the hazards associated with exposures to wear dusts and associated work practice to minimize these exposures is an enormous problem. Raybestos-Manhattan is placing warning slips in brake lining boxes in addition publishing service manuals and various information pamphlets.

Dr. Craft indicated concern that the NIOSH Alert, issued on August 8, 1975, had not reached more garage mechanics and garage operators. Dr. Craft suggested that NIOSH might consider publishing a booklet for garage work (brake rebuilding) through its small business task force.

Dr. Selikoff closed his remarks suggesting four areas of consideration by NIOSH.

1) NIOSH should request information on friction product use including a secular history of brake manufacturing and formulations from industry.

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2) NIOSH should continue studies of exposures to asbestos fibers during brake rebuilding including determinations of peak and time-weighted-average exposures.

3) A prevalance study including x-ray, pulmonary function and sputum cytology should be conducted among a cohort 1000 garage workers. NIOSH should also conduct a six month feasibility study to determine if an appropriate cohort for a retrospective mortality study could be defined. Tissue asbestos fiber burden studies should be considered.

4) NIOSH should continue developing approaches to educate exposed workers.

Dr. Craft thanked the attendees for their participation in the meeting, and indicated that NIOSH would consider further research in this area with respect to ongoing research, current study priorities and availability of resources.

cc: All Attendees
Dr. Finklea
Ed Baier
Dr. Wagoner
Dr. T. Mancuso
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