T14.6 Environmental and Occupational Health Hazards Associated with the Presence of Asbestos in Brake Linings and Pads (1900 to Present). Paustenbach, D. J.*, Brorby, G. P., Finley, B. L.; Exponent, Inc. gbrorby@exponent.com

Abstract: This paper presents a “state-of-the-art” analysis of what was known over time about the potential environmental and occupational health hazards associated with the presence of chrysotile asbestos in brake linings and pads. Initial concerns regarding asbestos exposure among friction product manufacturing workers were raised as early as 1930. By 1959, eight studies where these workers were part of the population assessed provided evidence of asbestosis among highly exposed workers, but provided little information on the magnitude of exposure. Between 1960 and 1974, five epidemiology studies of friction product manufacturing workers were conducted. The first exposure surveys and preliminary health effects studies of brake mechanics were also conducted during this period. Most of the information on exposure of brake mechanics to airborne asbestos during brake repair was gathered after 1974, primarily from a series of surveys conducted by NIOSH. These surveys indicated that the TWA asbestos concentrations (about 1-3 hrs in duration) during brake servicing were between 0.004 and 0.28 f/cc, with a mean of about 0.05 f/cc. From 1975 to 2002, more than 25 epidemiology studies were conducted examining the risks of asbestos-related diseases in brake mechanics. These studies found no increased risk of mesothelioma or asbestosis in brake mechanics, and no evidence that lung cancer in brake mechanics can be attributed to exposure to asbestos during brake repair. Finally, 20 studies published during this time period evaluated asbestos exposure or asbestos-related health effects in friction product manufacturing workers. These studies indicated that these workers were historically exposed to concentrations of chrysotile fibers perhaps 10 to 50 times greater than those of brake mechanics, but the risk of asbestosis, mesothelioma, and lung cancer, if any, was not apparent, except for those workers who had some degree of exposure to amphibole asbestos during their careers.