

## **An Evaluation of the Historical Exposures of Mechanics to Asbestos in Brake Dust**

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This article presents a historical analysis of published data regarding the exposure of brake mechanics to asbestos as a result of doing brake work. Concerns about this possible hazard were first raised in the late 1960s. This analysis focuses on 30 years of data collected during the brake repair event (e.g., a brake job) and 8-hour time-weighted average (TWA) personal samples. A brake job TWA represents the average concentration a mechanic experienced during brake servicing, rather than throughout the workday, and an 8-hour TWA represents the average airborne concentration of asbestos for the entire workday (which would involve brake work and other activities). Nearly 200 brake job and 8-hour TWA airborne asbestos samples were analyzed to assess how asbestos concentrations varied by type of vehicle serviced, country in which mechanics worked, time period, and brake-cleaning method. To facilitate comparisons, brake job TWAs were converted to estimated 8-hour TWAs using the durations and number of brake jobs performed per mechanic each day. Estimated and measured 8-hour TWAs for mechanics servicing automobiles and light trucks ranged from <0.002 to 0.68 f/cc, with a mean of 0.04 f/cc. In contrast, the 8-hour TWAs for mechanics servicing heavy trucks and buses ranged from 0.002 to 1.75 f/cc, with a mean of 0.2 f/cc, suggesting that these mechanics experienced higher daily asbestos exposures than automobile and light truck mechanics. Brake job and 8-hour TWAs for brake mechanics worldwide were found to be similar during the same time periods, and they were consistently below contemporaneous occupational health standards in the United States. The increased use of brake-dust control measures in some garages resulted in at least a 10-fold decrease in the TWA airborne concentrations of asbestos from the 1970s to the late 1980s.

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