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Public Health Service - BSS

TO: Asst. to Chief for Epidemiology and Field Studies, DOH

FROM: Engineering Section

SUBJ: Report on Brake Decomposition Tests

At the New York Academy of Sciences Conference on the Biological Effects of Asbestos" it was stated:(1) "The average private motor vehicle wears out three or four sets of brake linings and one or two clutch linings in its lifetime, and commercial and public transport vehicles wear out many more. These linings consist largely of asbestos which is ground to dust as the linings wear, and most wear occurs in built-up areas. This alone in most cities would involve the discharge of many tons of asbestos dust and fibers in the streets each year." This statement was meant to explain, in part, the presence of "asbestos bodies" observed in the lungs of non-occupationally exposed residents of Cape Town, South Africa, and Miami, Florida.

To investigate this possibility, a study of the mode of disintegration of brake shoes under simulated operating conditions was undertaken by using test facilities made available by the American Brake Shoe Company laboratory at Mahwah, New Jersey. These tests were made as part of the Division of Occupational Health's overall epidemiological study of the asbestos processing industry.

Automobile brakes are composed of from 30-50% asbestos (usually chrysotile) held together with various resins and containing such other ingredients as carbon, brass filings and rubber. Theoretically, a brake wears by abrasion of the surface by the drum and by thermal decomposition of the binder. The question to be resolved was: What fraction, if any, of the asbestos is liberated as free fiber in the wearing process under various operating conditions.

(1) Thomson, J.G.: Asbestos and the Urban Dweller, Annals of the New York Acad. of Science, V132, Art. 1 (196-214), Dec. 1965

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