hazardous as a carcinogen. Although there is an indication in the literature that less than 1% of the wear dust is fibrous asbestos (the remainder of the asbestos having been decomposed to non-fibrous dust) there is some controversy on this point. Furthermore, the number of fibers, rather than the weight, may be more significant. The number of fibers per unit weight of wear products and their size distribution are not know.

4. The organic ingredient in brake lining could, upon pyrolysis at the friction interface, produce carcinogenic compounds. It is not known whether such compounds are present in wear debris, and if so, if they would promote a carcinogenic reaction in the lungs.

5. The long term physiological effect of decomposed asbestos dust is not known. The only biological study of this material found in the literature indicates that calcined asbestos has produced acute toxic effects when injected in massive doses into animals. The amount of decomposed asbestos which could be distributed to the atmosphere from brake lining wear is unlikely to be great enough to cause any such acute effect in the population. No information has been found relating to its long term carcinogenic potential.

Experimental Program

Brake lining wear debris will be collected during controlled stops on a brake dynamometer. The test cycle will be selected to correspond to moderate braking conditions, say a deceleration rate of 8 to 10 ft/sec^2 from 40 or 50 mi/hr. Experiments will be done with both disc brakes and drum brakes with the wheel in place and with realistic air flow over the brake. This test may be combined with other dynamometer tests of brake lining performance. Measurements will be made of brake lining weight loss due to wear, and the following samples will be collected during multiple dynamometer stops:

1. Total wear debris collected on the wheel and in the drum will be measured for a determination of the fraction emitted to the air.

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