

2. Air Pollution from Brake Lining Asbestos

The samples of airborne wear debris from the dynamometer tests of a Pinto disc brake continues being examined for asbestos by Technical Services Department using a new sample preparation technique. The procedure used to prepare the membrane filters for electron microscope examination is one developed in the laboratory of Dr. I. J. Selikoff, et al, at the Mt. Sinai School of Medicine in New York. In this procedure, the filter sample is oxidized in a low temperature, activated oxygen asher, dispersed in a dilute polymer solution on a glass slide by mechanical washing, mounted in a film of the polymer on copper EM grids, and carbon shadowed. By examining the samples at more than 37,000 magnification, the number and size of the asbestos fibers are determined; this information is used to determine total mass of asbestos present. The method has the advantage of eliminating the obscuring effect of other wear debris present. It has the disadvantage that the original asbestos fiber bundle size distribution is destroyed and only total mass of asbestos may be determined, since fiber bundles are broken down into individual fibrils during sample preparation.

The examination of the samples is not yet completed and appropriate quantitative reference samples have not yet been prepared and counted - thus, obtaining an estimate of actual asbestos content requires, at this time, a reliance on Mt. Sinai laboratory experience to estimate asbestos losses from the samples during sample preparation. However, a preliminary estimate based on the incomplete data available to date indicates that asbestos fiber probably comprises less than 0.02% of the airborne wear dust, or less than 0.01% of the lining worn away.

3. Support to Divisions

A. Material Evaluation

Dynamometer tests were performed at the request of Brake Engineering Department to characterize 15 candidate disc brake lining materials and 4 different

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