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NILFISK OF AMERICA, INC.
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April 11, 1979

Mr. Robert S. Magdelain, President
Nilfisk of America, Inc.
201 King Manor Drive
King of Prussia, Pennsylvania 19406

Dear Mr. Magdelain:

This will report the results of air sampling tests conducted, in October 1978, to determine chrysotile asbestos concentrations during brake repair work.

Our major objective was to determine the efficiency of the Nilfisk Asbestos System utilizing HEPA filters, particularly with regard to submicroscopic asbestos fibers. Studies conducted in our Laboratory and elsewhere have demonstrated that free asbestos fibers present in brake drum dusts are predominantly shorter than 5μm in length. In particular, it was found that about 75% of the fibers in such dusts were less than 0.3μm in length, as determined by transmission electron microscopy. Thus, the optical microscopic technique used by OSHA for determining asbestos levels in workplaces (in which only fibers 5μm or longer are counted) would overlook a large number of asbestos fibers in air samples. That is, the total asbestos exposure in terms of fiber number, mass and surface area would be significantly greater than the levels determined using the OSHA fiber-counting method.

Therefore, it was of considerable interest to us to have an opportunity to test the efficiency of the Nilfisk Asbesto-Clene System. To do this personal air sampling was carried out on the exhaust of a HEPA-filtered vacuum dust collector and, simultaneously, on a garage mechanic cleaning a brake drum with the Nilfisk brake encapsulation cylinder. Three such tests were made. Background air samples, also using personal air pumps, were taken.

For each of the tests, a sample of settled dust was taken from the brake drum. The dusts were analyzed by x-ray diffraction in the step-scan mode to quantitatively determine asbestos contents, using a technique previously published. Asbestos was found in all three samples, ranging from 2.5% to 4.5% by weight.

The membrane filters were analyzed by both transmission electron microscopy (X25,000) and by the standard OSHA fiber-counting technique, employing phase contrast optical microscopy. The results are as follows:

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