

PARTICLE DATA LABORATORIES, LTD.



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October 5, 1982



Abex Corporation
Medical Department
4550 West 26th Street
Chicago, Illinois 60623

Attn: Mr. R. S. Suga

PDL Project: I-6960

Dear Mr. Suga:

The ten samples you submitted for asbestos evaluation on September 28, 1982, have been examined by optical techniques. Two species of asbestos - amosite and chrysotile - were found. Identification and quantitation were initiated by a gross examination of the samples as received. Any obvious fractions were noted and samples of each fraction were mounted for polarized light microscopy in a 1.515 index liquid. The fibers were thoroughly separated for examination. Preliminary evaluation was performed by morphology, refractive index relative to the mounting medium and birefringence to determine the possible asbestos present, as well as the abundance and type of other fibers, fillers and binders. The identification of non-asbestos material was not rigorous as these were not the specific item of interest.

When asbestos type fibers were seen morphologically, they were additionally characterized by immersion matching in refractive index liquids using both white light and the sodium d-line. A numeric determination of birefringence was available based on the index measurements. A sample had to fit into the accepted ranges of indices, birefringence and morphological features to be classed as asbestos. (For Amosite, straight thin single fibers and bundles of such fibers, usually with cleanly broken ends on individual fibers, refractive indices of 1.700 and 1.695, birefringence .005 and parallel extinction. Chrysotile has thin fibers and fiber bundles with both straight and wavy sections. The ends of bundles tend to be frayed. Indices are 1.529 - 1.559 and 1.537 - 1.567 and birefringence of .004 to .016. Anthophyllite was ruled out by its indices of 1.60 - 1.64, while crocidolite was ruled out by its blue color.) Quantities were based on areal coverage and thickness of the various species present. This is about as accurate as can be achieved by optical

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