



Research

MEMORANDUM
TO FILE

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By R. J. Lee, Research Scientist
Basic Research—Physics

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Subject COMMENTS ON EPA REPORT: "EVALUATING
AND OPTIMIZING ELECTRON MICROSCOPE
METHODS FOR CHARACTERIZING AIRBORNE
ASBESTOS," JUNE 6, 1978

Despite the assertions by Dr. J. Wagman, Director, Emissions Measurement and Characterization Division, EPA, Research Triangle Park, in a letter to C. F. Beukema (6/5/78), the subject report does not provide satisfactory scientific documentation to support the Provisional Methodology Manual. The points criticized in the manual reappear in the final report of the research conducted by IITRI during the period July 1975 to July 1977. The term "fiber" is explicitly defined as "any particle having an aspect ratio greater than 3:1 with substantially parallel sides." The term "asbestos" is properly defined in the Forward and Introduction of this report but no portion of the study addresses the question of fibrous vs. nonfibrous amphiboles or how to identify, or distinguish between these species. Further, the only category in the identification section for amphibole particles is under asbestos, thus, the operative definition of amphibole asbestos becomes "any amphibole particle having an aspect ratio greater than 3:1 with substantially parallel sides."

The identification procedures, which were only described in the report and not developed as part of the research, make no effort to distinguish fibrous from nonfibrous amphiboles. Further, they were not tested in a field situation such as analyzing ambient air samples from the vicinity of an ore processing operation where a significant number of minerals constitute potential interferences.

This report consists of a detailed description of an elaborate statistical treatment of a very limited amount of data. The bulk of the data was generated using laboratory samples containing primarily chrysotile. Only one field sample was collected, that from the Johns-Manville plant, and this sample was analyzed only for chrysotile. The results of a limited round-robin study on this sample were highly variable. In fact, the three EPA laboratories involved in the round-

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robin analysis reported fiber concentrations which differed by a factor of 50 (from 11 million fibers/m³ to 555 million fibers/m³) and the sample preparation using the proposed technique yielded fiber concentrations which were an order of magnitude lower than the one which was rejected. Since the ultimate test of any such proposed method lies in its suitability for analyzing field samples such results should have prompted IITRI to return to the laboratory—not to publish a provisional method.

A detailed review of the entire report including the statistical methods is in progress. Upon completion of this review and discussions with the counsel retained by AIOA (Mr. Pete Veeder) a meeting will be scheduled with J. Wagman to review the entire subject as recommended by C. F. Beukema in response to Mr. Wagman.

R. J. Lee

RJL:jao

cc: C. F. Beukema
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