
Semiquantitative Chemical Analysis of Asbestos Fibers and Clay Minerals with an Analytical Electron Microscope

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Abstract: By using a transmission electron microscope equipped with an energy dispersive spectrometer, it was possible to detect the morphological, structural, and chemical characteristics of individual asbestos fibers and clay minerals without any realignment of the equipment. A rapid and convenient procedure for semiquantitative analysis is proposed. Analyses are given for 21 hydrous silicates, asbestos and clay minerals, by both ordinary chemical and energy dispersive methods. The energy dispersive results were comparable to those obtained by chemical analysis. Application of this procedure to asbestos fibers proved this method to be practical and valid for characterization of asbestos in environmental and tissue samples.

Key Words: Amphibole • Asbestos • Chrysotile • Morphology • Structure

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