

THE DETECTION AND IDENTIFICATION OF ASBESTOS AND  
ASBESTIFORM MINERALS IN TALC

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Concern with the health hazards associated with the presence of chrysotile asbestos and/or the asbestiform minerals in talc has prompted widespread investigation of methods of analysis which would be consistent with good analytical practices. Of all the currently available techniques examined and evaluated, the two most reliable have been found by us to be Step Scanning X-ray Diffraction and Transmission Electron Microscopy, (TEM), with Selected Area Electron Diffraction, (SAED). The Step Scanning X-ray Diffraction technique allows quantitative detection and identification of tremolite and the asbestiform minerals down to 0.1% by weight. In the absence of chlorite it can detect and quantitatively determine chrysotile asbestos at the 0.5% level. Chlorite, however, is often associated with talc ore bodies. When present, chlorite will mask most of the main X-ray diffraction peaks of chrysotile. Additionally, the X-ray diffraction technique cannot distinguish between fibrous and non-fibrous forms of the asbestiform minerals. TEM is ideally suited to determinations of this type because of its high resolution and magnification capabilities, the morphological nature of the problem and the mineralogical identification capability through SAED.