

TRAVELERS MEMORANDUM

DATE: June 23, 1977

TO: E. Collier, W. Griffin

SUBJECT: Garden State "Cyprus Miston Vapor Talc"
Samples #'s 74-77; 627-76

☐ TSA ☐ FJS
☐ ECG ☐ RHT
☒ TRR ☐ HBW
☐ DGS ☐ PJH
☐ FILE
☐ 60

D. G. S.

AUG 17 1977

In recent months, various studies by the National Institute for Occupational Safety and Health (NIOSH), National Bureau of Standards (NBS), Occupational Safety and Health Administration (OSHA) and Bureau of Mines have questioned the technique of using phase contrast microscopy to perform asbestos fiber determinations. In particular, talc samples have caused considerable controversy because of the difficulties they present to an analyst in separating or defining the various types of asbestos-form fibers that may be present in many talc products.

The Travelers Chemical and Environmental Laboratory has been aware of the controversial aspects of the phase contrast microscopy technique and has attempted to make rational and accurate decisions in determining if samples being analyzed do contain asbestos fibers. Even though various precautions are taken for the analysis of asbestos fibers, it has been our concern, particularly with talc, that the standard method of phase contrast microscopy may not be adequate.

To investigate the variability resulting from the phase contrast microscopic technique, the Chemical and Environmental Laboratory performed a study on several samples that had been previously analyzed using the standard phase contrast microscopic method. All the samples in the study were bulk samples and were previously reported to positively contain asbestos-form fibers. Also, all the samples with the exception of one were talc samples that had been submitted to determine if they were asbestos-form talc.

The samples were analyzed by using a combination Scanning Electron Microscope (SEM), Transmission Electron Microscope (TEM), Energy Dispersive Analysis of X-Rays (EDAX) and Selected Area Electron Diffraction (SAED).

Samples of Cyprus Industrial Minerals Companies Miston Vapor Talc were analyzed by using these more sensitive methods and no asbestos-form fibers could be found in the samples. All the particles that were previously considered fibers, when checked at higher magnification, were reflections of talc platelets. Approximately fifty thousand particles were examined from these talc samples. This indicates there is a 95% probability that the fiber content of these samples is less than 0.01%.

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I examined these samples on two different occasions, first at a vendor laboratory where an analysis was performed using a SEM and TEM-EDAX-SAED systems. Then, at the invitation of the Cyprus Industrial Minerals Company, I went to their Los Angeles laboratory and analyzed the samples a second time using their SEM and TEM-SAED systems. I would like to thank O. Gill and C. J. Palmateer of the Cyprus Industrial Mineral Company for their cooperation in these studies.

The Chemical and Environmental Laboratory was not able to confirm its original findings of asbestos-form fibers. We also acknowledge because of the limitations of the standardized phase contrast microscopic technique that the original findings were not an accurate indication of any fibers in the product.

The preceding results reflect the findings of a laboratory study. They may not be used for or are considered to be a specific product endorsement.

REM/c/ekm



Ronald E. McCullen
Lab Administrator