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Richard J. Zazenski
Vice President, Quality Assurance

September 30, 1991

Mr. Jack Paterno
Synthetic Specialties
P. O. Box 120
Middletown, New Jersey 07748

Dear Mr. Paterno:

Subject: Asbestiform Mineral Testing - Cyprus Talc Products

Cyprus Industrial Minerals certifies that our talc products do not contain detectable quantities of asbestos or asbestiform minerals. This certification is maintained by an internal quality assurance testing program that was established nearly twenty years ago to ensure product purity. It is the policy of Cyprus Industrial Minerals that we will not sell talc products that contain detectable quantities of asbestos or asbestiform minerals.

Asbestos is a commercial term applied to a group of highly fibrous silicate minerals that readily separate into long, thin, strong fibers of sufficient flexibility to be woven. To date, six minerals have been identified to exist in an "asbestiform" structure. They are:

- Chrysotile, or White Asbestos
- Crocidolite, or Blue Asbestos
- Amosite, or Brown Asbestos
- Anthophyllite
- Actinolite
- Tremolite

Chrysotile belongs to the mineral group called serpentines. The other five belong to a mineral group called amphiboles.

In our analyses of talc deposits around the world, we have found that both serpentine and amphibole minerals are commonly associated with talc. It appears rare, however, that these mineral groups contain the asbestiform varieties of the six aforementioned minerals. For instance, antigorite is a mineral common to the surrounding geology of a talc deposit. Antigorite is the non-asbestiform counterpart to chrysotile. Enclosed is a picture of the six asbestiform minerals and their non-asbestiform counterparts which illustrates the physical differences.

There are four types of analytical procedures generally utilized to analyze for asbestos and asbestiform minerals in bulk talc samples. They are:

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1. Polarized Light Microscopy with dispersion staining (PLM);
2. Scanning Electron Microscopy with energy dispersive spectroscopy (SEM/EDS);
3. Analytical Electron Microscopy with selected area electron diffraction (STEM/SAED); and
4. High intensity, slow step scanning X-ray diffraction.

Each of these methods has limitations but when utilized together, provide the latest in technology for asbestos analysis. Cyprus Industrial Minerals has the capability and skilled technicians in-house to conduct all of these analyses.

Our current quality assurance/certification testing program reflects the fact that our products are not suspected to contain even trace amounts of asbestos or asbestiform minerals. Our massive data base of test results suggests that our talc deposits simply do not contain these undesirable impurities. Our current testing protocol for cosmetic and pharmaceutical talc products is as follows:

1. A composite sample from each production lot is analyzed by XRD for total amphibole minerals. The level of detection is 0.1% by weight. If any amphibole minerals are detected to be present, the product is quarantined pending positive identification of the amphibole by PLM.
2. On a monthly basis, a collection of these composite samples are analyzed by PLM for amphiboles and serpentine minerals. The level of detection is on the order of 100 ppm. The purpose of the PLM analyses is simply to confirm and document the absence of these minerals, regardless if they were asbestiform or otherwise.
3. Electron microscopy is now performed specifically for asbestos analysis on an audit basis only. However, if a talc sample is in the microscope for some other evaluation, the sample automatically is reviewed for fibers or suspect particles.

Enclosed is the test method for our routine control of asbestiform amphibole minerals. It was originally assembled by the Cosmetic, Toiletry and Fragrance Association (CTFA) to utilize in the control of cosmetic talcs.

I hope this information is of some value to you. Please let me know if I can be of any further assistance.

Sincerely,


R. J. Zazenski

Enclosure

cc: M. A. Nordhauser (w/enclosure)
R. Grexa/Cosmetic Specialties (w/enclosure)

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asbestiform

non-asbestiform

Same Names

asbestiform

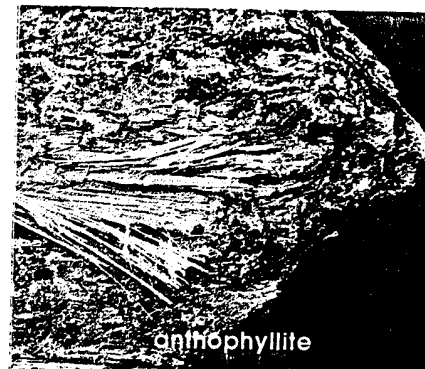
non-asbestiform



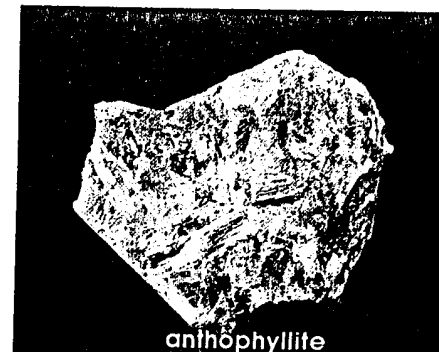
chrysotile



antigorite



anthophyllite



anthophyllite



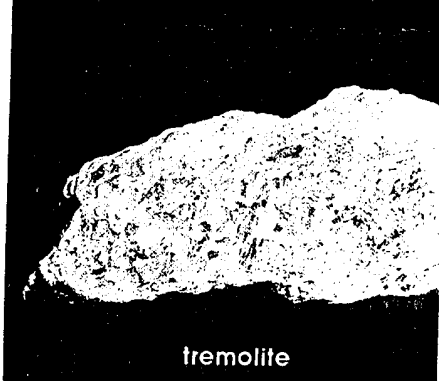
crocidolite



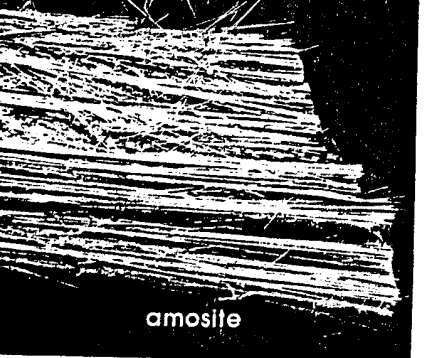
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