

FILE NAME: RT Vanderbilt (RTV)

DATE: 1973 Aug 28

DOC#: RTV129

DOCUMENT DESCRIPTION: J-M Internal Memo RE Tremolite in Talc & Asbestos Dangers in Tremolite



Johns-Manville

Rec'd 8/18/73
Internal Correspondence

To: F. L. Pundsack - R&D Center Date: August 28, 1973

From: C. Speil - R&D Center

Copies:

Subject: TREMOLITE IN TALC

You asked that I review the background for our decision not to support Vanderbilt's claim that "tremolite is not asbe tos".

I need not dwell on the technical reasons involved since you are well acquainted with these. However, to summarize briefly, tremolite is an amphibole mineral differing from amosite, crocidolite, and other amphiboles only in the substitution of calcium for part of the magnesium, iron, and/or sodium present in the internal structure of other amphiboles. Fibers of tremolite and actinolite are generally much shorter and usually more brittle than those of crocidolite and amosite and, therefore, find little commercial utility as a reinforcing agent. From a scientific standpoint, any tremolite particles which are fiber-form must be categorized as asbestos since all fibrous amphiboles are included in this definition.

The first indication of J-M's stand on tremolite as an asbestos mineral is included in the minutes of a meeting of Celite and Environmental personnel held on October 2, 1972 (see Attachment A). The conclusions of this meeting regarding reclassification of tremolite is summarized on page 5 and includes the following statements:

"E. M. Fenner expressed firm opinion that we haven't got a prayer concerning establishing a variance or amendment to the OSHA regulation with respect to tremolite". . . . "Furthermore, E. M. Fenner and H. M. Jackson report that amosite and crocidolite have proven causative to mesothelioma. Both these materials have a 'fibrous' nature that is similar to tremolite. The electron micrographs exhibited in a symposium of papers presented to the Canadian Institute of Mining and Metallurgy and reprinted by the Quebec Asbestos Mining Association '1958' exhibit this characteristic on pages 21-23. comparing amosite, crocidolite, and tremolite. Thus, H. M. Jackson expressed the opinion that an attack on 'fibers delineated from tremolite would be a long-term study. Tremolite was not separately identified in the OSHA hearing, so evidence would have to be developed to disclaim tremolite functioning as an asbestos mineral. There appears to be no

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area of attack by reclassification of tremolite through mineralogical or structural definition. Any approach to disassociation will require medical evidence."

Although no Research representatives were present at this meeting, I heartily agree with the conclusions of the group.

On January 11, 1973 S. Speil, R. S. Lamar, N. B. Sheffel, and E. L. Smith were given a presentation at the New York offices of R. T. Vanderbilt of the story put together by Mr. C. S. Smith, Vanderbilt geologist, to "prove" that tremolite, especially that present in the Vanderbilt Company New York State talc, was not asbestos. Unfortunately, this presentation gave no technical evidence to support Vanderbilt's position. The photomicrographs showed that the particles of tremolite were, indeed, much shorter than chrysotile fibers and did have an aspect ratio (L/D) less than that of crocidolite and amosite used commercially. However, the L/D for many particles was definitely over 3 (the present limit established by ACGIH and accepted by OSHA) and, therefore, they would be included in the category of "fibers". Many of these particles had L/D's greater than 10.

It is conceivable that the presentation would have an impact on the layman, but assuredly not on any person having technical competence in the field of asbestos or asbestos regulation. The presentation relied heavily on layman-type definitions of a "fiber" from various encyclopedias and a list of asbestos minerals proposed by Mr. Thompson which he indicated came from THE FEDERAL REGISTER and which included tremolite and actinolite as non-fibrous varieties. This information is included as Attachment B.

In the amphibole field, amosite and crocidolite fibers have their non-fibrous counterparts with specific terminology--cummingtonite and riebeckite, respectively. Normally, anthophyllite, tremolite, and actinolite are used to include any occurrence of these amphiboles whether fibrous or non-fibrous.

At this meeting I indicated that J-M could not support technically Vanderbilt's position. Mr. Harvey stated that the Talc Producers had scheduled a meeting in early February to develop new definitions of asbestos, talc, and commercial talc which they would propose for acceptance by an ASTM Subcommittee on Paints and Pigments. Once accepted, this would serve as a springboard to foster approval by Government-regulating agencies. I pointed out that definitions for asbestos and for the term "fiber" already existed under the auspices of other ASTM groups and agreed to supply this information, as well as

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to participate in the February 5 meeting on definitions. Subsequently, I sent to Mr. Thompson copies of the definitions relating to "asbestos fiber" under ASTM D2946-71T in which fiber was defined with a L/D of 10:1 as well as the definition of fiber for textile purposes under ASTM Committee D123 in which an L/D of at least 100 was specified. These are included as Attachment C.

At the February 5 meeting none of the attendees from other talc producers concurred with the Vanderbilt proposal that tremolite was not asbestos. During the discussion I emphasized:

1. that one of the major items requiring action was to secure elimination of the ACGIH definition "talc (fibrous)-Tremolite" and the concomitant 5 fibers/cc TLV established by the ACGIH;
2. that tremolite particles could be classed as non-fibrous or fibrous depending upon the L/D ratio for each individual particle and that the thrust here should be to attempt to establish a higher L/D than the 3:1 currently accepted. Because time was of the essence, I suggested that we propose the 10:1 ratio of ASTM Designation D2946-71T;
3. that we not try to redefine asbestos to specifically exclude tremolite since assuredly this could only lead to a long-term technical and scientific debate;
4. that any presentation to the FDA or to the Bureau of Mines Symposium which had been arranged at Vanderbilt's behest should concentrate on the medical evidence regarding the difference in biological effect of tremolite and other amphibole fibers; and,
5. that we propose a single definition of commercial talc which would include all types of talc and, therefore, eliminate the need for differentiating between "pure" talc and talc (fibrous)-Tremolite as defined by the ACGIH.

In general these recommendations were adopted by the group and the following definition proposed by me was tentatively accepted for presentation to the Talc Producers Association:

"Industrial talc is a product varying in mineral composition from the mineral talc $[Mg_3(Si_2O_5)_2(OH)_4]$ to mixtures of mineral talc and other naturally associated non-fibrous and/or fibrous minerals as defined by ASTM Designation D2946-71."

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Acceptance of this definition would automatically infer a change of the L/D of a fiber to 10:1 and eliminate many tremolite particles from the "fiber" category and, therefore, from the asbestos category. However, a considerable percentage of the tremolite particles would still be classed as "asbestos fiber". Although ASTM would probably accept this definition of talc, I frankly doubt whether Government agencies would.

Subsequent to this meeting, R. S. Lamar on January 31, 1973, proposed to P. A. Martinson that we issue a letter giving our position to our customers and the industry, and stating that tremolite is an asbestos mineral. I commented at length on this letter on February 14 (see Attachment D) recommending that we not send out such a letter. The major thrust of my comment was addressed to the point that tremolite can be either fibrous or non-fibrous, i.e., either asbestos or not depending on the shape of each individual particle and that we should not categorically state that all tremolite was indeed asbestos. (Incidentally, some of my much earlier comments might be interpreted as indicating that all tremolite was asbestos.)

Since that time I have had essentially no contact with the tremolite in talc situation which has been Bill Streib's responsibility. My understanding is that at the Bureau of Mines Seminar in May 1973 the J-M presentation was restricted primarily to medical aspects, differentiating between the effects of tremolite and other asbestos fibers. I also understand that the Vanderbilt presentation included the same story which was given to us in January, to "prove that tremolite was not asbestos", but possibly modified somewhat in the light of our discussions.

In July 1973 Vanderbilt through their attorneys petitioned OSHA to modify asbestos standards promulgated pursuant to the OSHA Act. This is presented in Attachment E. I am entirely in accord with their petition to replace the word "tremolite" by "asbestiform tremolite" to distinguish this from the non-fibrous (by definition) forms of tremolite. In this way non-asbestiform tremolite and talc would be subject to the "mineral dust standard" and asbestiform tremolite would continue to be subject to the "asbestos standard".

Their proposal summarized in Appendix I of Attachment E is based on the February 5 meeting previously referred to and, therefore, is entirely acceptable although personally I see no possibility of Government agencies changing the L/D definition of a fiber from 3:1 to 10:1 except by the presentation of

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valid medical evidence to support such a change. Some of the work that the QAMA is supporting at Fairleigh Dickenson and the work being done by Stanton on sized fibers prepared by us might serve as the basis for requesting such a proposed change which would, undoubtedly, be opposed by Selikoff on the basis of the limited data available.

Incidentally, I have been told thirdhand that Vanderbilt secured concurrence of their original proposal to eliminate tremolite as an asbestos mineral from Governmental regulations (EPA) and that this is supported by Appendices 9 and 10 of Attachment E. A close reading of these letters from EPA indicates the presence of "weasel words" since they both include the statement "the standard is applicable, however, to paint and coatings manufacturing when asbestos as defined by 40 CFR 61.20, with the above exception, is used in the manufacturing process".

Tremolite is included as an asbestos mineral in 40 CFR 61, and even though both letters state that 40 CFR 61, National Emission Standards for Hazardous Air Pollutants, will be amended in order to properly clarify this situation, neither letter indicates that tremolite will be removed from the definition of 40 CFR 61.21. It is hard to understand how industrial talc, some of which contains 50 per cent or more of tremolite, can be specifically excluded merely by calling this material talc (containing tremolite) rather than calling it tremolite (containing talc).

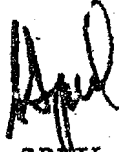
A copy of the applicable portions of the National Emission Standards for Hazardous Air Pollutants for asbestos is included as Attachment F.

In the J-M "crisis" meeting on August 24, 1973, to discuss the FDA decision to issue proposed standards on food grade talc which presumably would also include talc used in paper for wrapping foods, R. F. Carter stated that he had been told by FDA middle-management personnel responsible for preparing the regulations that they were in favor of issuing an interim regulation which would continue the status quo for at least 2 to 3 years while technical and medical evidence were being accumulated to insure a fair and reasonable set of regulations. However, they had been instructed instead by their superior, the new Commissioner of FDA, to prepare proposed regulations restricting the use of talc-containing asbestiform minerals for immediate publication. Carter was told that the entire technical and medical evidence presented by J-M and other industrial petitioners was completely ignored in this decision which was motivated by political pressure from the Environmental Defense Fund and other groups.

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Finally, to complete the record, I am attaching a copy of my letter of August 9, 1971, to F. D. Richards (Attachment G) pointing out the possibility of future difficulties with FDA before we purchased Grantham Talc.



S. SPILL

SS/rs

Attachments A through G

January 25, 1973

F. J. Solon, Jr.
H. M. Jackson
E. M. Fenner
W. E. Reitze
Dr. G. Wright
Dr. S. Speil
Dr. J. Leineweber
Dr. E. Marriner
R. P. Carter
W. L. Van Derbeek
P. A. Martinson
H. R. Keefe
R. S. Lamar
N. B. Scheffel
E. B. Smith

R. T. VANDERBILT ACTIVITIES FDA-OSHA REGULATIONS

On January 11 as arranged by Norman B. Scheffel, a meeting was held at the R. T. Vanderbilt New York offices to observe a presentation of the field by RTV to Government agencies concerning talc vs. asbestos. In attendance were Dr. Speil, R. S. Lamar, N. B. Scheffel, and E. B. Smith.

The presentation consisted of a series of slides as photomicrographs comparing Vanderbilt New York State talc (Nytal 100, 200, 300, 400), California talcs (Westal 101, 303, and 404), and beneficiated California talcs. Compared also were slides of asbestos minerals. In this presentation, it is the objective of Vanderbilt to establish that tremolite is non-fibrous and non-asbestiform in order to obtain an amendment or variance in the OSHA regulations to exclude tremolite. The presentation did contrast the particle shape of their talc mineral as compared to asbestos fibers but lacked any real scientific evidence to differentiate current definitions.

Vanderbilt has made this presentation to the New York State Bureau of Mines attended by Dr. Jacquelin Messite, Merley, Sheffield, and Stein. Kleinfeld not present due to his retirement. Vanderbilt has also made this presentation to Earl Goodwin at the U. S. Bureau of Mines. They have also made these present to EPA at Durham attended by Mr. Arthur Stevens, Deputy Director of the Bureau of Mines and Safety. Vanderbilt feels that they have cast some doubt on the definition and are hopeful to pursue Government agency toward a new definition of "commercial asbestos" as opposed to tremolite as an asbestos mineral. Vanderbilt has also been in communication with the A.S.T.M. Committee D-1-31-07 concerning extender pigment. Presentation made by Allan Harvey at Miami was oriented towards the removal of tremolite from the asbestos definition. It is their hope to obtain A.S.T.M. approval and use this approval with other Government agencies.

Vanderbilt has justifiably been reluctant to tackle NIOSH until more confidence is developed in their presentation. Dr. Speil was of considerable help at this meeting in pointing out the pitfalls and errors in Vanderbilt's thinking. It was concluded that the attack on tremolite vs. chrysotile must be medically oriented as opposed to a simple fiber definition or redefinition. Speil suggested that a more appropriate approach would be to obtain an exclusion

of tremolite based on scientific or medical reasons as opposed to a redefinition separating tremolite from chrysotile and/or asbestos. However, Vanderbilt intends to pursue the subject by enlisting the Talc Industry Association's help in developing an acceptable definition of talc, asbestos, etc. at the meeting scheduled for February 5 in New York. In view of the expertise obtained by J-M people in this mineralogical area and the Government communications area, we urge that Dr. Speil and additional environmental people at J-M attend the February 5 meeting in New York.

Attached to this memo are some definitions that Bob Bacon has extracted from various encyclopedias and from the Federal Register concerning asbestos fibers. It is in this direction that RTV intends to proceed. We certainly question this attack and increased help from J-M to guide this program properly and scientifically and not to the detriment of the talc industry.

Earl B. Smith

EBS:cks