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GWH Schepers letter to R T Vanderbilt Co.
Re Classification of Asbestos types
as to Biological effects

March 23, 1973

S. Lincoln Avenue
Lebanon, PA 17042

JMEH 1181

R. C. Bacon
Director, Research and Development
R. T. Vanderbilt Company, Inc.
33 Winfield Street
East Norwalk, Connecticut 06855

Dear Mr. Bacon

RE: Talc (0) Tremolite (10), Chrysotile (2+), Anthophyllite (3+), Amosite (4+), Crocidolite (10+) etc

Thanks for consulting me about these items. As you know from my publications I have had considerable experience in decoding the biological action of the fibrous silicates. This is based both on elaborate inhalation experiments, human exposures with necropsy studies, and of course review of the literature.

The order in which I have listed these fibrous minerals represents my interpretation as to their capacity for inducing biological responses. Talc is listed first and given a zero rating since it is in pure form, practically innocuous except for overwhelming prolonged exposure. The latter is no longer permissible in the USA so, for practical purposes, this substance is harmless.

Crocidolite, by contrast, is listed last and given a 10+ or maximal rating. It can with relatively minor exposure, produce exceedingly serious and progressive changes in the lungs or wherever it becomes lodged. One of these effects is the capacity to produce neoplastic disease.

Talc, Tremolite and Chrysolite need to be discussed a little more fully.

Pure mineral talc of the non-tremolite kind, does not induce a tissue response of any clinical significance. If there is prolonged exposure the lung aleoli and some lymphatics can trap phagocytic cells which ingested the talc particles and this may block out their functions temporarily. This type of pathology is called a thesaurosis or storage effect. It is usually reversable on cessation or decrease of exposure and no significant permanent after-effects result.

The same applies for tremolite talc. It is inert like Georgia talc and induces only a thesaurosis effect when there is excessive prolonged exposure. However, Tremolite sometimes is "contaminated"

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with chrysotile or other true asbestos type fibrous minerals. When this is the case, the thesaurosis becomes a thesaurismosis ie the alveolar walls and perilymphatic tissues begin to react, and fibrous tissue forms. This is due to the asbestos fibers and not the tremolite component. The fibrotic response is directly proportional to the ratio of asbestos fibers admixed with the tremolite. You will note from one of my experiments that when small quantities of chrysotile were mixed with gypsum the chrysotile effect never-the less prevailed despite dilution with the inert gypsum.

This sounds like I make chrysotile out to be a bad actor. It is true that prolonged exposure to chrysotile will produce asbestosis but of a relatively mild kind. In comparison, however, with what Crocidolite does, Chrysotile is a relatively tame beast. There are a number of persons currently making excessive propaganda about Chrysotile. Their noise tends to drown out the voices of sanity. The hullabaloo will of course go on for some time. Progressively, however, the evidence is coming in that Chrysotile causes only a fine interstitial fibrosis without blocking off the respiratory surfaces. The patient develops some disability because of stiffening of his lungs, but can survive for a long time with fairly good gas exchange. I have never yet seen a case of lung cancer caused by Chrysotile alone and no one else has ever been able to show me a case either. In mixed sequential exposure experiments with beryllium sulfate, as a potent carcinogen and Chrysotile as a potential co-carcinogen, the suprise finding was that Chrysotile acted as an anti-carci...

Of course, if one mixes Chrysotile with Amosite, Crocidolite or Silica exposures, bad effects follow - read bad. Possibly this why Chrysotile got a bad name.

I hope this summary is of help to you. If I can provide more detail, please let me know.

Sincerely,

GERRIT W. H. SCHEPERS, M.D., D.Sc.

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