



DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE
FOOD AND DRUG ADMINISTRATION
WASHINGTON, D.C. 20204

August 29, 1975

Asbestos - Vanderbilt

Dr. John Moore
Chief, Animal Science and Technology Branch
NIEHS
P.O. Box 12233
Research Triangle Park, NC 27709

Dear Jack:

Al Harvey and Dr. Thompson called me yesterday morning about their efforts to supply us with a sample of their "tremolite" for the asbestos feeding studies.

They have located an area, from which they have a small sample, which is pretty close to pure "tremolite". They estimated that upon grinding they would have a material that is 90%+ "tremolite".

The question they posed was to what mesh pass through should they grind this material. Their initial survey of so-called food-grade talc showed in specification for mesh size pass through. They recommended that our "tremolite" be so ground that 95% or more would pass through a 325 mesh screen. As a ballpark estimate, Thompson guessed that 4 to 5% would be greater than 45 microns in length; with an average length of about 20 microns. The material would be ground using a compressed air mill impingement process rather than ball-milling. The former process, they felt, would enhance breakage along the normal fracture plane, thus leading to the possibility of having more of the shorter particles.

They noted that some food-grade talc and talcs for the drug industry are mostly less than 325 mesh in size. In addition, we felt that today as well as in the past, there was a greater possibility of greater ingestion of talc through pharmaceutical exposures than through food exposures. In addition, possibly more people could be exposed through the former usage than the latter usage.

For these combination of reasons, they felt that grinding to pass through a 325 mesh screen was preferable. Of course, the final choice would be ours.

I promised to see if I could develop anything more specific on the mesh size pass through characteristics of talc for food and drug usage. However, based on the information presented to me yesterday, I feel that for our particular purpose, a minus 325 mesh material would be preferable.

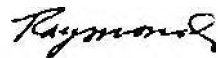
Page 2

I had a misconception corrected about tremolite found in talc from California and several other commercial sources. This material, as mined, is not fibrous but is of a crystalline habit. Apparently tremolite of a fibrous habit is not of a common occurrence. We were shown a sample of "fibrous" tremolite when we were in Ampian's office last month.

We also discussed the term - fiber. Apparently, among some groups, the term "fiber" takes on the immediate connotational aspect of "asbestos fiber". Al Harvey and Dr. Thompson felt a term not having any immediate connotational meaning to the hearer should be used in the future. It seems we will now have to be semanticists as well as scientists; but for a good cause.

Best regards.

Sincerely yours,



Raymond E. Shapiro, Ph.D.
Epidemiology Unit, HFF-108
Bureau of Foods

Memorandum for the Record
of a Telephone Conversation
Friday Morning, August 29, 1975

Between: Mr. Ray Krammes
Whittaker, Clark and Daniels
1000 Cooledge Street
South Plainfield, NJ 07080

Phone: 201/561-6100

and

Dr. Raymond E. Shapiro
Epidemiology Unit, HFF-108

I called Dr. Schaffner, earlier in the morning, to ascertain if he had any specifications for food grade talc. He suggested calling Mr. Fred F. Roesch, a vice-president in the above company. Whittaker, Clark and Daniels are big jobbers of minerals, colors and chemicals. Mr. Roesch was in conference when I called and I was referred to Mr. Krammes.

Mr. Krammes told me that, the talc they sell for the polishing of rice is 98% through a 100 mesh screen. They call this talc "White Snow" and he thought it came either from South Korea or China; probably South Korea. I told Mr. Krammes that Dr. Fred Pooley, Cardiff, Wales, had examined two talcs from Asia used commercially in the U.K., -one from South Korea and one from India. Since this company had not imported any talc from India, Mr. Krammes was quite sure now that "White Snow" came from South Korea.

As for the U.P.S. talc used in the dusting of capsules and in the tableting of pills, Mr. Krammes told me that the product they sell for this use was called Alpine talc from Alpine, Alabama. This material is ground so that 100% goes through a 325 mesh screen.

I remarked to Mr. Krammes that with all the talc mines in this country, I was surprised they were importing talc for the polishing of rice. Mr. Krammes then remarked that with the controversy of "asbestos" in talc, and possible health implications, many talc mines in this country had closed and they were using an overseas source for this food purpose.

I then thanked Mr. Krammes for this information and his assistance in this matter.

The Ontario Research Foundation (ORF) supplied chemical and size characteristics data throughout the milling program, and the assistance of R. W. Glass, D. R. Hollingbery, B. J. Ferguson, and E. Brown, all of ORF, is gratefully acknowledged. Numerous analytical personnel assigned to Avondale Research Center and student assistants from the Department of Geology, University of Maryland, provided most of the data summarized in this report. Their assistance is acknowledged in the sections of the report to which they contributed.

SAMPLES

Tremolite

Twelve hundred pounds of nonfibrous tremolite, containing approximately 25 percent serpentine plus minor amounts of talc and other minerals, was collected from veins at two levels in the Vanderbilt mine, Balmat, N.Y. This sample was milled by Vanderbilt to minus 325 mesh in a Wheeler mill.⁵ Because of slight variations in the mineralogy of the samples at the two levels in the mines, the sample was blended, using the NBS sample preparation facilities. Blending was performed in a 10-cu-ft V blender (fig. 1), but because of the limited capacity of the blender, approximately 960 pounds was blended, using a four-stage blending procedure. The blended tremolite was repackaged in 38 virgin cardboard drums, containing about 25 pounds each. Homogeneity of the samples was verified by fluorescent X-ray spectrography for samples collected from six randomly selected drums, which were being filled for shipment to NIEHS. No significant differences were detected by the various characterization procedures.

Chrysotile

Two chrysotile test materials were purchased in quantities of approximately 1,000 pounds each. The short-fiber chrysotile, identified as CCF-25, was purchased from the Union Carbide Corporation, Niagara Falls, N.Y. This sample was obtained from the New Idria serpentinite mass located in the southern part of the Diablo Range in southwestern San Benito and western Fresno Counties of California. The ore body is unusual because of the virtual absence of long fibers and the high chrysotile content of the ore. To check for homogeneity, samples of CCF-25 were randomly selected from nine drums of the material shipped to NIEHS. No significant differences were detected in the nine lots by the various characterization procedures.

A broader range fiber-length test material, identified as Plastibest-20, was obtained from the Johns-Manville Jeffrey mine, Asbestos, Quebec, Canada. Plastibest-20 is a particularly clean grade of chrysotile used by the plastics industry. To check for homogeneity, samples of Plastibest-20 were collected from 10 drums of the test material supplied to NIEHS. No measurable differences in composition were observed, using the various characterization procedures.

⁵Reference to specific trade names or equipment does not imply endorsement by the Bureau of Mines.

Memorandum for the Record of a Telephone Conversation.

late Monday afternoon, 1 March 1976

between

Dr. E. E. Shapiro
Epidemiology Unit, HPV-103

and

Dr. A. Langer
Mount Sinai School of Medicine
New York, New York

Dr. Langer had just finished speaking with Marion Burros concerning asbestos in talc, and wanted to inform me of the information he had given Ms. Burros.

Dr. Langer had examined twenty brands of talcum powder which were purchased off-the-shelf. These were, admittedly, single grab samples for each of these brands. X-ray diffraction step-scanning analysis was used and the numbers below represent weight percent. Ten of the twenty samples contained asbestos, ranging from two to twenty percent. Five contained anthophyllite and tremolite (A + T), 3 contained tremolite (T) alone, and two contained anthophyllite (A) alone. The asbestos containing talcum powders are:

Cashmere Bouquet	20% (A+T)
Baner & Black Baby talc	15%
Coty Air	11%
Rosemary	11% (A+T)
	plus 30% quartz
ZBT Baby	8%
Fabregi Brut	5%
Yardley Invisible	5%
Yardley Black	3.5%
English Leather	2% (A)
Mennen	2%

Dr. Langer promised to send a letter confirming the information given over the telephone, with some additional details.

Discussing these results, Dr. Langer remarked that if these "grab" samples represent more than a one time occurrence, simple x-ray diffraction analysis should pick up asbestos, at least at the five percent level and above.

I have written Dr. Langer to obtain samples of these talcs for our chemists.

March 2, 1976

Dr. Arthur M. Langer
Associate Professor of Mineralogy
Head, Physical Sciences Section
Department of Community Medicine
Mount Sinai School of Medicine
of the City University of New York
Fifth Avenue and 100th Street
New York, NY 10029

Dear Art:

Many thanks for your telephone call yesterday afternoon giving us your information on talcum powder. We would greatly appreciate your sending us, if at all possible, samples of the talcum powders used in your study. If the lot numbers are available, please send them as well.

Best regards.

Sincerely yours,

Raymond E. Shapiro, Ph.D.
Epidemiology Unit, HFF-108

March 2, 1976

Dr. Fred B. Peoley
Dept. of Mineral Exploitation
University College
Newport Road
CARDIFF CF2
South Wales
United Kingdom

Dear Fred:

I was speaking to Art Langer, yesterday, about talc, and Chris Wagner's talc inhalation study came up. I've already written Dr. Wagner, but I was wondering whether you had any information on impurities in Italian talc in general, and the one Dr. Wagner used, in particular.

Best regards.

Sincerely yours.

Raymond E. Shapiro, Ph.D.
Epidemiology Unit, HVT-108

H. Hiernaux

March 2, 1976

R. E. Shapiro
Epidemiology Unit, HPP-108

Talc.

The data of Langer, which I verbally gave you yesterday afternoon, makes one wonder whether the values for asbestos in talc are the result of the "grab" sampling, at the time taken, or are indicative of a nationwide spread occurrence. I believe you mentioned that simple x-ray diffraction analysis has an analytical sensitivity of one or two percent. Therefore, in light of this new data, I would recommend for your consideration a survey of all talcum powders, on-the-shelf, using this technique.

Raymond E. Shapiro, Ph.D.
Epidemiology Unit, HPP-108



University College, Cardiff

Postal Address: University College, P.O. Box 78, Cardiff CF1 1XL.
Telephone Cardiff 443111 Telegrams: Coleg Cardiff

From Dr. F.D. Pooley

Department of Mineral Exploitation

FDP/JT

9th March 1976

Dr. R.E. Shapiro, Ph.D.,
Epidemiology Unit, HFF-108,
Dept. of Health, Education & Welfare,
Public Health Service,
Food and Drug Administration,
WASHINGTON D.C.

Dear Dr. Shapiro,

Thank you for your recent letters -
it was nice to hear from you again. Regarding
Italian talc as used in Dr. Wagner's experi-
ments, we have the following mineralogical
data :-

Talc	-	90 - 92%
Chlorite	-	6%
Carbonate	-	1.0 - 2.0%
Quartz	-	1 - 1.5%

The samples we have examined from this
mine have not been found to contain any
asbestos minerals.

I am sorry I have no information on glass
fibre or the preparation of short chrysotile
fibres - quite a problem I should imagine.

I would like again to ask you about the
possibility of research support for a tech-
nique to identify and quantify asbestos in
air, water and tissue samples. We have worked
up what we think is a suitable technique and
require some support to get it going.

If it is of interest, I can send some
data to you on the procedure to identify,
quantify and estimate mass of minerals and
fibre.

Yours sincerely,

F.D. POOLEY

Mr. H. Kiermann, HFF-440
Dr. W. Horwitz, HFF-101

March 18, 1976

Dr. R. E. Shapiro
Epidemiology Unit, HFF-108

Talc and Asbestos Analysis Techniques

The attached letter from Dr. Fred Pooley indicates the purity of the Italian talc used by Dr. J. C. Wagner in his inhalation studies. The results were reported at a meeting in Edinburgh, Scotland, last September.

Analytical methodology for asbestos is a pressing question for this Bureau. Dr. Pooley is an internationally recognized expert in this area. Is there any way we could support his research? If so, I'll write for further details.

Raymond E. Shapiro, Ph.D.
Epidemiology Unit, HFF-108

Attachment: Letter dated 9th March 1976 to Dr. R. E. Shapiro from
Dr. F. D. Pooley, Cardiff, Wales.

March 18, 1976

Dr. Fred D. Pooley
Dept. of Mineral Exploitation
University College
Newport Road
CARDIFF CF2
South Wales
United Kingdom

Dear Fred:

Many thanks for sending me the information on the purity of the
taic used by Chris Wagner in his inhalation studies.

I have forwarded your inquiry concerning research support to
interested parties within this Bureau. Before proceeding into
specifics, what level of support (dollars) do you need?

Best regards.

Sincerely yours,

Raymond E. Shapiro, Ph.D.
Epidemiology Unit, EPP-108
Bureau of Foods, FDA

ENVIRONMENTAL SCIENCES LABORATORY

MOUNT SINAI SCHOOL OF MEDICINE, 10 EAST 102ND STREET, NEW YORK, N.Y. 10029

from
Mr. Lubin

AUG 3, 1977

Here is the paper
as provided at the
meeting. The book, Inhaled
Particles IV was published
in 1977 by Pergamon, but
I haven't got a copy yet
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1: Inhaled Part. 1975 Sep;4 Pt 2:647-54.

Related Articles

Animal experiments with talc.**Wagner JC, Berry G, Cooke TJ, Hill RJ, Pooley FD, Skidmore JW.**

Italian talc has been tested on rats using three routes, intra-pleural inoculation, inhalation and ingestion. Groups exposed to superfine chrysotile asbestos and untreated controls were included for comparison. In all the experiments animals were allowed to live out their lives. The intra-pleural inoculation of talc produced no mesotheliomas in contrast to eighteen produced by the chrysotile asbestos. After ingestion, one leiomyosarcoma occurred with Italian talc and one with chrysotile asbestos. Whether these tumours are a consequence of the feeding is uncertain. The inhalation studies demonstrated that with equal dosage, talc can produce a similar amount of fibrosis as asbestos. However, the chrysotile exposed rats developed lung adenomas, adenomatosis and an adenocarcinoma, whereas the only lung tumour seen in animals exposed to talc was a small adenoma, which may have been an incidental finding.

PMID: 1236243 [PubMed - indexed for MEDLINE]

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