[redacted]

Construction Products Division

GRACE

TO: Vermiculite Hazard Evaluation Program File

DATE: September 13, 1984

FROM: S. Venuti

SUBJECT: Initiation of the Vermiculite Hazard Evaluation Program

CC: R. J. Bettacchi
J. A. Danneker
H. C. Duecker
R. C. Ericson
H. A. Eschenbach
W. R. Hanlon
R. C. Walsh
D. L. Wightman
J. W. Wolter

On July 17, 1984 I requested comments on the implementation of a formal QA Program designed to monitor finished product-tremolite content and exposure levels as an aspect of product quality (reference attached). All verbal and written response has been both constructive and supportive.

Actual implementation began in August. The first project is an evaluation of the effectiveness of CMC Binder on vermiculite for Horticultural end-use. This project will be completed by October. It is planned that on a monthly basis throughout 1984/1985:

- Samples of Libby Vermiculite will be produced, analyzed in the Cambridge QA Lab, and tested for airborne fiber release in actual or simulated field tests.

- Samples of South Carolina Vermiculite will be taken from regular inventory (at selected locations) and analyzed for fiber content in the QA Lab.

Data collected in this process will be used to create written Hazard Evaluations for Libby and South Carolina Vermiculites as required by the OSHA Hazard Communication Standard.

Stephen Venuti

S. Venuti

SV:td

Attachment

10003099

GRACE

Construction Products Division

TO: H. C. Duecker
H. A. Eschenbach
J. W. Wolter

DATE: July 17, 1984

FROM: S. Venuti

SUBJECT: Vermiculite Hazard Evaluation Program

cc: J. A. Danneker
R. C. Ericson
W. R. Hanlon
R. C. Walsh

Attached is the description of a Quality Assurance Program designed to monitor finished product-tremolite content and exposure levels as an aspect of product quality. The current Material Safety Data Sheets include reference to tremolite content and tremolite exposure. Compliance with the Federal Hazard Communication Standard and other state regulations, require that such statements be supported with a formal written hazard evaluation and that Material Safety Data Sheets be maintained as current.

Bob Walsh agrees that this type of program is necessary. He has asked that I circulate the details and request the comments of all concerned.

Stephen Venuti
S. Venuti

SV:dm

Attachments

Initial Phase: Correlation Study

This phase will address the broad spectrum of variables which can effect both total tremolite content and release of airborne fibers. The objective will be to investigate whether there is a correlation between these factors:

- Existing Quality Control Standards allow product to be shipped with a heavy particles content (according to Test Method C-31G) of up to 5% by weight. A correlation between heavy particles and tremolite content should be developed. This may require development of in-plant Q. C. procedure to differentiate total heavy particles into hydrobiotite and nonhydrobiotite fractions.

- Release of airborne fiber is assumed to be related to the total tremolite content of the product. A correlation should be developed for each product relating fiber exposure to total tremolite content. Protocol will be required to address the use of vermiculite-containing products in actual end-use environments.

- Initial phase should be completed using D-18 expanded vermiculite determined to be good quality (except for the samples with intentionally high heavy particle contents). The initial phase should also be repeated with selected Model A expanded vermiculite of marginal quality. A degree correlation between heavy particles content, total tremolite content, airborne fiber release, and vermiculite quality will be developed using all of the above data.

Audit Phase: Ongoing Random Analyses

This phase should be part of the total quality control program for expanded vermiculite (such as the MONOKOTE C-11A Program). Product will be randomly selected plant-by-plant and subjected to the same type of analyses as above, i.e.:

1. Standard Quality Control Tests (VAC, Sieve Analyses).
2. Heavy Particle Determination.
3. 400X Optical (Tremolite Fiber Analysis).
4. Airborne Fiber Exposure According to Protocol (analysis to be completed by Research or independent laboratory).

This program will provide continuing support and a basis for the annual review required by OSHA and State Right-To-Know Laws. Each product will be audited at least once, but not more than three times per year.

Implementation

- Quality Control Tests - performed by Cambridge Q. C. Technician.

- Sample preparation and 400X Optical Analysis of Product - performed by Q. C. Technician; trained by J. C. Yang.

- Field sampling protocol and performance - audited and approved by ICG Industrial Hygiene.

- Actual field sampling - by S. Venuti with some assistance from other staff under direction of S. Venuti.

- Field sample analysis (airborne fiber) - analyzed by J. Yang or outside certified lab. Samples will be verified by electron microscopy periodically.

Cost will include travel, sample analysis, and increased staffing of a part-time (20 hrs./wk.) Grade 5 Technician.

GRACE

Construction Products Division

To: S. Venuti

Date: April 10, 1984

From: F. W. Eaton

Subject: Air Monitoring Costs

Per your request of April 6, 1984, job site air monitoring costs can only be established on a time/location basis. Equipment costs can be obtained from T. Hamilton and/or J. Yang. Cost of supplies and analysis work from J. Yang.

Actual air monitoring costs include travel, meals, lodging, car rental if required and that portion of salary allocated to air monitoring. The dollar amount is dependent on location and number of jobs monitored. No job should be sampled for less than three (3) hours. As our field results (f/cc) improve and PEL decrease, sampling periods should be increased to 5-6 hours for a more accurate and representative 8 hour TWA exposure.

F. W. Eaton

FWE/sy

APR 4 - 1984

Construction Products Division

GRACE

TO: S. Venuti

DATE: April 11, 1984

FROM: J. C. Yang

SUBJECT: Asbestos Analysis

CC: H. C. Duecker
R. C. Ericson

To follow-up our meeting on April 6, I am tabulating the time required for the specific analysis in the following:

1) Heavy Particle Determination - Our method

a.	Sampling - to quarter the sample from a 4 cu. ft. bag to 1000-2000 g	30 minutes
b.	Heavy Particle Determination	15 minutes
	Total	45 minutes

Training a person to do this analysis: 1 hour

2. Respirable Asbestos Fiber Determination

a.	Sampling - to quarter a 4 cu. ft. bag sample to 10 gram	1 hour
b.	Sample preparation - weighing and mounting	5 hours
c.	Fiber Counting - 400 particle are counted	
d.	Data computation	
	Total	6 hours

Training a person to do this analysis: 10 hours

Audit the fiber counting work:

first year, every three months - 20 hours each time
later, every six months - 20 hours each time

If you have any questions, please let me know.

Julie C. Yang

JCY/ph

10003104

JUL 26 1984

GRACE

Construction Products Division

TO: S. Venuti

DATE: July 25, 1984

FROM: H. C. Duecker

SUBJECT: Vermiculite Hazard Evaluation Program

CC: R. C. Ericson
H. A. Eschenbach
R. C. Walsh
J. W. Wolter
J. C. Yang

The following comments are in response to your memo of July 17, 1984 on a proposed vermiculite hazard evaluation program.

I. Comments on Initial Phase: Correlation Study

1. The correlation between heavy particles and tremolite content will no doubt be different for Libby & Kearney ore concentrates. Both will have to be evaluated.

2. The correlation between fiber exposure and tremolite content may be possible within a given product end use test, but my guess is that the variability of fiber exposure from one end use to another will be greater than due to tremolite content. Therefore, several tests with each end use might be required to establish the correlation you are looking for.

3. We do not have a great deal of data using the 400X optical analysis for tremolite fiber. It would be desirable to keep retain samples for analysis by the more detailed procedure used to determine content of expanded products in 1977 and 1983 in the event that the 400X optical method does not give the anticipated results.

II. Comments on Implementation

1. The initial analysis of airborne fiber samples should be done by our lab if possible. This is work that we should be able to handle and our experience with counting product end use samples will be a plus.

2. Field samples may vary considerably in appearance due to variations in end use patterns and tramp dust. Verification by electron microscope may be needed for each end use application in the long run (though a few random samples may suffice if the anticipated variation is not found.

H. C. Duecker

HCD/ph

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