



Inter Office

Personnel and Organization Staff

April 17, 1974

Mr. J. D. Woods, Supervisor
Personnel Services and Security
Saline Plant

cc R. P. Carzoli
T. L. Kopke
G. O. Lease, M.D.
J. P. McCallum
L. H. Roalinski, Ph.D.
J. Stirling

Subject: Talc Concentrations in Compounding Room

On February 20 and March 6, 1974 we sampled the compounding room operator to assess concentrations of talc as fibers and total dust. On December 21, 1973 an asbestos-free talc (Beaverwhite 200--Cyprus Mines Corporation) replaced Desert 51 talc (an asbestos contaminated talc) in production operations. The survey was to determine if Occupational Safety and Health Act (OSHA) requirements imposed on this area based on past surveys⁽¹⁾ could be lifted due to the change of talc.

Conclusions

1. Concentration of total talc exceeds any applicable OSHA standard. Operator should always wear a Company approved respirator while working in compounding room.
2. It is a wise preventive measure to keep those OSHA requirements imposed on the compounding room by previous surveys⁽¹⁾. Concentration of talc fibers found and evidence of similarity of health consequences between talc (2.3) and asbestos exposures, lead us to this conclusion.

Discussion

On December 21, 1973 production began using Beaverwhite 200 instead of Desert 51 talc in the compounding room operation. The change was to eliminate asbestos from production operations. It was hoped that this revision would out-date OSHA requirements imposed on compounding operations when an asbestos contaminated talc (Desert 51) was in use. This survey was to evaluate concentrations of Beaverwhite (dust and fibers) to which the compounding room operator is exposed.

Concurrently with environmental samples, bulk Beaverwhite samples were sent to two different laboratories for fiber content analysis.

The environmental samples taken for "fiber determination" comprise just one cycle of the operation. The sample for "total dust" represents a much longer period. We feel that these samples are representative of conditions to which the operator sampled is exposed.

5007 0865

PRODUCED BY FORD

Mr. J. D. Woods
April 17, 1974
Page 2

Results for bulk Beaverwhite indicate presence of fibers (see data sheet). Discrepancy of results is due to the two different analytical techniques used. Total dust result exceeds OSHA standard for "Inert or Nuisance Dust" of 15 mg/M³ and certainly exceeds OSHA standard for non-asbestos form of talc of 20 million of particles per cubic foot (MPPCF).

lc Results of samples for fiber content exceed OSHA standards for asbestos fibers. These fibers were not qualitatively analyzed. Beaverwhite 200, although a type of asbestos, is not legally defined by OSHA as "asbestos." By straight interpretation of the Act, OSHA requirements and/or regulations for "asbestos" do not apply to Beaverwhite 200. However, reported cases of health consequences due to talc exposure⁽³⁾ similar to those due to asbestos exposure and results obtained in this and past surveys, lead us to advise, as a preventive measure, to observe the same OSHA requirements and regulations for handling asbestos as for handling Beaverwhite.

In regard to the operation sampled, it is too difficult and too expensive to control dust generation by ventilation. Previous surveys reported, in most instances, concentrations above OSHA asbestos fiber limits. Handling of bags (full or empty), changing or stacking pallets, moving flo-bins are all sources of dust. Furthermore, individual technique seems to be the most important factor regarding dust conditions.

Libardo LaTorre
Industrial Hygienist
Industrial Hygiene Section
Employee Health Services Department

ms

References

- (1) H. B. Lick's March 16, 1973 letter and N. Brusk's letter - October 3, 1973 on same subject.
- (2) Pulmonary talcosis from cosmetic talcum powder, JAMA - July 31, 1972, Vol. 221, No. 5, page 492.
- (3) Mortality among talc miners and millers in New York State, Archives of Environ-

Data Sheet

Saline Plant

Location: Compounding Room

Pollutant Evaluated: Talc (Beaverwhite 200--Cyprus Mines Corporation)

Operator sampled: C. Schultz, SS #2058, wearing Glendale Respirator,
G.R. 2000, B.M. 21A-82

Type of samples: Breathing zone

OSHA Standards:

Talc (non-asbestos form).....20 MPPCF*
Talc (fibrous) use asbestos limit..... 5 Fibers > 5 Micrometers
Cubic Centimeter of Air

Results

Sample No. 1: While adding talc bags and polypropylene
scoops to the mixer - sampled for 17 min. 15.1 Fibers > 5 Micrometers
Cubic Centimeter of Air

Sample No. 2: While stacking pallets, removing empty talc
bags and moving flo-bins - sampled for 6 min. 55.6 Fibers > 5 Micrometers
Cubic Centimeter of Air

Sample No. 3: Covered operations described for sample
Nos. 1 and 2 - sampled for 70 min. 29.4 mgs. Total Dust
Cubic Meter of Air

Instrumentation: MSA Model G Portable Pump calibrated as used
Millipore Type AA membrane filters, 0.8 μ
Gelman Glass Fiber Filters, Type A 37 mm

Determination: Sample Nos. 1 & 2 by Scientific Research, Electron & X-ray
Optics Section -
Using standard National Institute Occupational Safety & Health (NIOSH)
counting techniques

Sample No. 3 by Gravimetry

Millions of particles per cubic ft. of air, based on impinger samples counted by
Light-Field Techniques

3007 0867

PRODUCED BY FORD

Data Sheet

Saline Plant

Results of Bulk Beaverwhite Analysis

1. Particles exceeding lengths of 5 micrometers as well as aspect ratios of 3:1

Lab 1 16% by count, 4.2% by weight

Lab 2 3.7% by count

Lab 1: Scientific Research, Electron & X-ray Optics Section, by Electrostatically dispersing talc from a bulk sample on a metal substrate and measuring particle dimensions directly from scanning electron micrographs.

Lab 2: Environmental Health Laboratories, visual count using an optical microscope 400 magnification (NIOSH counting technique)

Note: Criteria for a recommended standard

Occupational Exposure to Asbestos, U. S. Department of Health, Education & Welfare, 1972, page VIII-2 defines "Fibre" as follows:

"A particle of length between 5 and 100 μ m and having a length-to-breadth ratio of at least 3:1, observed by transmitted light by means of a microscope at a magnification of approximately 500X."

Page VIII - 6

"Any particle having an aspect ratio of three or greater is considered a fiber."

8007 0866

PRODUCED BY FORD