

THOMAS A. BOZICH & ASSOC.
493 CATLIN ROAD
CLEVELAND, OHIO 44143

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JUL 18 1974

FILED
216-692-7674
(CWRU) 216-368-2906



July 19, 1974

Mr. David Woodbury
Foseco Incorporated
20200 Sheldon Road
Brook Park, Ohio 44142

Dear Mr. Woodbury:

The following is a report of an industrial hygiene survey which was performed on July 3, 1974, at your request. Mr. Jeff Ferguson provided the necessary coordination; Mr. Greg Thomas and a Trainee were present during the survey.

I. PURPOSE AND SCOPE:

As a result of recent OSHA inspections at your plant, it has been alleged that prevailing airborne concentrations of asbestos at some locations could be exceeding the permissible level. The purpose of this survey was to determine if in fact the prevailing concentrations are excessive, and if so, to determine the locations and magnitude of the problem. Review of raw material records which you furnished enabled identification of all materials which contain asbestos, and in turn all departments where these materials are being handled. These departments were then ranked on the basis of their potential for producing excessive airborne concentrations. Air samples were collected in as many of these departments (based upon priority) as time permitted during the survey. Because of the review currently being undertaken in the plant regarding controls, exhaust ventilation, etc., this evaluation excludes any measurement and/or discussion of these aspects.

II. FINDINGS:

Three raw materials used in the plant are of concern for this evaluation: fibrous talc (#12) which is ranked as asbestos toxicologically, amosite asbestos (#89), and chrysotile asbestos (#100). The following is a summary of locations where these materials are used:

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II. FINDINGS: (cont'd)

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<u>Department</u>	<u>Type Material Used</u>
103 Flux	12
105/106 Kalmin, Kalminex	89, 100
107/108/114 Profax, Proflex	89, 100
110 Moldcore	12
133 Salvage	89, 100
134 Receiving	12, 89, 100
145 Pre-Batch	89, 100
182 Workshop	89, 100

In addition to the above materials, it was reported that wollastonite was being purchased in proprietary form (#124) and was being phased into some production areas as an "asbestos substitute." It was reported that the manufacturer of this material claims it does not exhibit the toxicological properties of asbestos. Based generally upon the results of the sampling by OSHA, you reported that; (1) the wollastonite was found in the air along with asbestos, (2) the wollastonite has a microscopic appearance similar to that of asbestos fibers and would therefore probably normally be included in the asbestos count, and (3) OSHA was able to accomplish some differentiation which enabled the elimination of the wollastonite from the asbestos count.

An extra sample was prepared from some bulk wollastonite material furnished. This sample was examined microscopically under phase contrast illumination, along with the air samples collected. As a result of this examination, it was established that visual differentiation between wollastonite and the asbestos forms was possible, except for those wollastonite fibers with a diameter of less than approximately 1.5 microns. All of the wollastonite fibers, therefore, which were distinguishable on the filters were eliminated from the asbestos counts which are noted in this report.

Battery operated personal air samplers were used to collect breathing zone (B.Z.) air samples for two operators who were loading mixers on the large pulping platform in Department 108. Asbestos was being loaded into 3 out of 8 mixers. Wollastonite was being loaded in some of the other mixers. Because of the heavy dust loading, sampling was limited to approximately 1 hour. Examination of the filters revealed that one had been ruptured during the sampling and was therefore discarded. Result of analysis of the other was 2.8 fibers/ml. The filter had a heavy dust loading and some wollastonite.

The prevailing cross-draft at the time of the survey was blowing from the above platform towards Ovens #3 and #4. A general room air sample was collected in this location just inside of Department 107, west of Oven #3 at the loading position. The sample was collected

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II. FINDINGS: (cont'd)**CONFIDENTIAL**

for over 1 hour, and the result was 0.3 fibers/ml. The filter had a heavy dust loading and a slight amount of wollastonite.

A personal sampler was used to collect a B.Z. air sample for the operator on the pulping platform in Department 106. The sample was collected during the loading of one batch which contained asbestos but no wollastonite. Sampling time was approximately 6 minutes. Result of the analysis was 9.2 fibers/ml. The filter had moderate dust loading and no distinguishable wollastonite.

Another B.Z. sample was collected for the operator on the pulping platform in Department 107. The sample was collected during the loading of two batches, one of which contained asbestos, the other wollastonite. Sampling time was approximately 8 minutes. Result of the analysis was 6.1 fibers/ml. The filter had moderate dust and heavy wollastonite loading.

Another B.Z. sample was collected for one of the operators who was unloading the product from Oven #3 in Department 107. Sampling time was nearly 1 hour. Result of the analysis was 0.9 fibers/ml. The filter had light dust loading and moderate wollastonite loading.

The current OSHA permissible 8-hour time-weighted average concentration for asbestos fibers is 5 fibers/ml of air. Only fibers longer than 5 microns are to be counted. The ceiling concentration is 10 fibers (over 5 microns)/ml of air. On July 1, 1976, the 8-hour time-weighted average concentration will be reduced to 2 fibers (over 5 microns)/ml of air. The ceiling limit will remain the same.

III. CONCLUSIONS AND RECOMMENDATIONS:

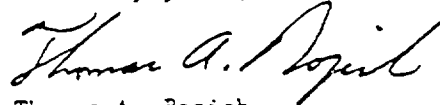
1. The B.Z. concentration of asbestos on the pulping platform in Department 108 was found to be less than the current permissible but greater than the new limit which will be effective in 1976. The reported concentration of 2.8 fibers/ml could be considered an approximation of the 8-hour average since the operation is generally repetitive and continuous for the entire shift. If on some days more asbestos is loaded than was being loaded during the survey, however, the concentration would be expected to be greater than that measured.
2. The general room air sample collected near the entrance to Oven #3 was found to be well below the current and 1976 8-hour permissible. This value of 0.3 fibers/ml appears reasonable in view of the previous results reported for the platform. The result would be considered a good approximation of the 8-hour average.

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III. CONCLUSIONS AND RECOMMENDATIONS: (cont'd)**CONFIDENTIAL**

3. The B.Z. sample on the pulping platform in Department 106 was found to be in excess of the current 8-hour permissible, and very close to the ceiling concentration. The reported concentration of 9.2 fibers/ml, however, is not considered to approximate the 8-hour average, since only one batch was sampled. The operator obviously does not load constantly, and at times prepares some batches which do not have asbestos. In addition to these factors, the 8-hour average concentration would also depend on how fast the air "clears" between asbestos loadings. Consequently, the 8-hour average would depend on the ratio of the time spent loading asbestos to the total work time, corrected for air "clearance" rate. Assuming an optimum condition of immediate "clearance" of the air between loadings, the ratio would have to be at least 1 to 5 in order to meet the 1976 permissible.
4. The B.Z. sample on the pulping platform in Department 107 was found to be in excess of the current 8-hour permissible. The reported concentration of 6.1 fibers/ml is considered a good approximation of the 8-hour average if the operator loads asbestos half of his time. Since one batch of asbestos and then one non-asbestos was loaded, the result would reflect an asbestos to total work time ratio of 1 to 2, and would include the allowance for air "clearance" of asbestos between loadings. On this basis, a ratio of at least 1 to 6 would be required to meet the 1976 permissible (NOTE: Air "clearance" factor included in this estimated ratio was based on the amount of "clearance" which occurred during collection of the sample while actually operating at a ratio of 1 to 2.).
5. The B.Z. sample collected during unloading of Oven #3 was found to be well below the current and 1976 8-hour permissible. The result of 0.9 fiber/ml is considered a good approximation of the 8-hour average, assuming an average amount of asbestos was being handled.
6. On the basis of the above results, which reflect operating conditions on the day of the survey, it is recommended that additional or improved dust control measures be considered for all of the pulping platforms sampled, in order to be able to meet the new 1976 permissible concentration. The alternative would be to phase down (if possible and practical) the use of asbestos to a level necessary to maintain an 8-hour average concentration below the 2 fibers/ml limit. In the event non-asbestos dust concentrations generated in these same areas are also determined to be excessive, however, the alternative course of action may not be a viable option.

Sincerely yours,

Thomas A. Bozich
Industrial Hygiene Consultant

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