PLAINTIFF'S EXHIBIT WRG-485

PERSONAL AND CONFIDENTIAL

TO: R. M. Vining

DATE: October 7, 1968

FROM: Peter Kostic

SUBJECT: Dust Controls - Zonolite Libby

CC: W. L. Taggart
E. L. Mears
C. J. Dugan
J. D. Kingery
R. W. Sterrett
J. P. Cahalane
J. F. Murphy, Jr.

During the week of July 15, 1968, at our request, R. D. Hindmarch, Supervisor of the Johns-Manville Industrial Hygiene Department conducted an industrial hygiene survey of our Zonolite Libby operations. A copy of his report is attached.

Just three weeks previous, on June 25-26, J. R. Lynch of the U. S. Department of Health, Education and Welfare made a similar survey at the request of the Montana State Board of Health. A copy of his report is also attached.

During the month of September, air samples were taken on each of the floors of the Dry Mill (as is normally done on a monthly basis). A copy of his report of dust counts is also attached.

Following is an extraction and interpretation of the significant remarks of each of their reports. It should be stated that the mineral Tremolite, which is of primary concern insofar as our dust emissions are concerned, is a type of asbestos and that TLV (Threshold Limit Value) and maximum allowable concentration, for all practical purposes, are synonomus.

R. D. HINDMARCH - J-M

Laboratory analysis of dust samples collected on each of the six floors in the Dry Mill showed that the quantity of Tremolite in the "whole dust" ranged from 12 to 23%.

Based on the threshold limit value for Tremolite of 5 million particles per cubic foot of air, it would indicate that this value would be applicable to our operation.

Of the 47 air samples collected, dust counts in 13 of the samples exceeded the 5 mppcf threshold. Highest counts were shown in samples collected on the second floor of the Dry Mill.

During the survey the following conditions were noted:

a. Numerous visible dust leaks from equipment on all floors.

b. Ore falling from conveyors onto floor.

c. Moderate to heavy accumulations of dust on floors, machinery and building structure.

d. Use of brooms and air hoses for cleaning purposes (instead of vacuum cleaners).

e. Visible clouds of dust drifting through open windows.

J. R. LYNCH - HEW

In addition to sampling of the air by impinger as Hindmarch had done, Lynch also used the more sophisticated and comparatively recent Membrane Filter method.

Impinger Method - a measured amount of air is pumped through a flask containing a liquid, usually alcohol, where particulate matter is deposited. The dust particles are then counted microscopically. Utilizing this technique, all dust particles up to 10 microns in size are counted. No differentiation is made as to the nature of the particles. This is by far the most widely used method of air sampling.

Membrane Filter Method - This method is used almost exclusively by the U. S. Public Health Service for enumeration of asbestos dust. Samples for count are collected on filters by personal samplers operated by battery powered pumps worn by the employees. Air flow is of course measured. Only asbestos fibers are counted and, according to Lynch, a maximum allowable concentration of 12 fibers longer than 5 microns per cubic centimeter has been proposed to replace the existing 5 mppcf threshold limit valve. He further states that the 12 fiber/cc alternate for the first time permits evaluation of the asbestos hazard in mixed dust environments.

He says that since a significant amount of tremolite asbestos is present, the asbestos is the major health hazard and the asbestos TLV of 5 mppcf will be governing. All of the experience upon which this TLV is based is from exposure to chrysotile (long fiber asbestos). However, in the absence of other data, it must be assumed that tremolite asbestos is equally toxic and the same limits should apply.

Lynch further notes that conditions at the mine would appear satisfactory by the 5 mppcf TLV but must be considered doubtful by the tentative 12 fiber/cc TLV. By both impinger and membrane filter measurements, the dry mill is in excess of the TLV. In general, Lynch says that the dry mill poses a serious hazard to the health of the workers and some other areas are of doubtful safety.

He notes that local exhaust ventilation is used extensively in the dry mill but that it is not sufficiently effective, that a tightening-up of all exhaust hoods is required, that a combination of smaller hood openings and increased air flow should be obtained such that control velocities of at least 200 fpm result at all openings, and that this is a matter of detailed hood redesign, increased system capacity and continuous maintenance. The road surface at the mine, he adds, should be treated to reduce the dust.

According to Lynch, the respirator program in the mill was not effective since the respirators were not of an approved type and were not being worn by all employees. I do not comprehend his reasoning on this since only Bureau of Mines approved respirators were stocked and issued while I was there some two weeks before Lynch, and as a matter of fact I was issued and I wore a Mine Safety Dustfoe respirator which has BuMines approval. The only conclusion to be drawn is that he might have seen one or two employees wearing respirators which they had obtained elsewhere.

In addition to the forementioned recommendations having to do with improvements in mechanical ventilation, Lynch recommends the establishment of a continuous monitoring program, using the membrane filter fiber count method rather than the impinger method.

W. C. NORDIN - ZONOLITE LIBBY

Sampling of the air on all floors of the dry mill during the month of September showed dust counts to be substantially higher than they normally are. Nordin notes that there was a sweeper working on the 5th floor during the sampling period and that there were a few flexible rubber vent connections off some of the screens on the 5th, 4th and half-deck floors. His dust counts far exceeded those of Hindmarch and Lynch.

SUMMARY

Air samples collected by three separate parties during three separate months (June, July, September) showed that dust concentrations in some areas exceeded the recommended threshold limit valve of 5 mppcf.

Lynch's more recent sampling technique also showed that the 12 fibers longer than 5 microns/cc TLV was exceeded. It must be anticipated that dust concentrations will be higher in the dry mill during the cold weather months when all doors and windows are closed.

The three reports as well as my safety survey report of July, 1968, make note of dust leaks, material spilling from conveyors, heavy dust accumulations, absence of vent convectors and the need for tightening-up of all exhaust hoods.

RECOMMENDATIONS

1. Set up a program of weekly inspection of all floors and spaces in the Dry Mill for ore spills and dust leaks. Great importance must be attached to these inspections, and all those involved must understand this. To insure that inspections are systematic and recorded, a check sheet should be provided for this purpose. Completed check sheets should be turned over to a designated member of Management for appropriate action and follow up. Priority must be given those items having to do with mechanical dust controls. To make sure that leaks and spills occurring between inspections receive prompt attention all mill employees should be instructed to report such conditions to their supervisors immediately.

2. Enforce the wearing of Bureau of Mines approved respirators for all intermittant exposures to dust and where local exhaust ventilation is not practical. This should include the lower-bin to river truck driver during loading and dumping, the front-end loader operator, maintenance men repairing or servicing conveying and exhaust equipment, and all others who may be required to enter areas where the air is dusty. Failure to wear proper type respirators should be reason for disciplinary action.

3. Make the Skip operator's enclosure as dust-tight as possible. Instruct him to keep the windows and door of his cubicle closed at all times. Make the building walls surrounding the skip-car loading station as dust-tight as possible to prevent movement of dust from that area into the mill.

4. The practice of sweeping and using compressed air to clean up ore and dust contributes to air contamination. Sweeping of ore spills into a hole in one floor and letting it fall to the floor below is a major cause of air contamination. Ore spills should be picked up at the point of the spill and not broom or shovel pushed to a hole in the floor. Daily inspections, as recommended above, will control leaks and spills and reduce the number of clean-ups to a minimum. Only vacuum cleaners should be used for cleaning up dust.

5. Lynch makes the recommendation that a continuous monitoring program, using the membrane filter fiber count method, be established, this is to replace the presently used impinger count method. The membrane filter method is more complicated than the one presently used, and the equipment more sophisticated. J-M has used only the impinger method in the past, but will now be utilizing filter membrane method as well. In other words, they'll be using both methods until they've decided that the filter membrane method is more satisfactory.

Because the new method is more complicated and the threshold limit value not yet definitely established, I feel we should stick with the impinger method and the 5 mppcf maximum. At a later date, when the filter membrane method is more widely used and has proven to be more reliable, we will undoubtedly have to switch to the new method.

6. Lynch recommends that the exhaust system in the dry mill be improved by reducing hood openings and increasing system capacity so as to provide at least 200 fpm at all hood openings. Before considering hood redesign and increasing the system capacity, however, I would recommend that existing equipment be given a good going over, to make sure that hoods, ductwork, chutes and conveyors are clear and tight, and that blower motors, fans, belts, etc. are operating at maximum efficiency. Then, if we're unable to bring the system to 200 fpm, necessary improvements will have to be made. (Note: Central Engineering will check with manufacturers as to capacity of existing equipment.)

We have been invited by J-M to visit their Lampoc, California Celite operation at which the mill closely resembles our dry mill insofar as processes and equipment is concerned. We should accept this invitation and learn what we can of their dust controls.

DUST CONTROLS - EXPANDING PLANTS

We have noted in past reports of safety surveys that air contamination and dust accumulations at a number of our expanding plants was visibly heavy. Because employees at these plants are exposed to tremolite dust, we should start a program of monitoring the air at the expanding plants. I would collect the samples during my safety surveys and turn them over to our analytical lab for analysis and particle counting. Employee health, growing concern over air pollution and the fact that the federal government is considering the adoption of an "Asbestos Workers Health Protection Act" makes it essential that a company-wide program of dust control be established.

Peter Kostic

PK/paj