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ATI Visit to Quebec Asbestos Mines

This is to report on the writer's participation in the visit to the Canadian asbestos mines sponsored by the Asbestos Textile Institute, which was a part of the regularly scheduled meeting of that organization.

Monday was taken up with the several sub-committees meetings in New York with the writer attending that of the Technical Committee. The topics under consideration by this committee are: standards for asbestos tapes, the results of which will be referred to ASTM; measurement of dust in asbestos; and high temperature testing of asbestos textiles.

The group was scheduled to arrive in Thetford Mines Tuesday afternoon but we did not arrive until late Tuesday night.

Wednesday was devoted to tours of the underground mines, open pit mines, and mills. The group was assigned to the different mines, the writer visiting the Johnson Mine.

A special check was made of the types of wire used in blasting because of the trouble encountered here with wire contamination in asbestos. Johnson and Corporation Companies use copper fuse wire, Bell uses copper covered iron wire with the idea of removing the wire during processing by magnets. We can with a reasonable accuracy trace any insulated wire or magnetic fuse wire back to its source.

The writer passed up the visit to the open pit mines for a discussion of air hygiene with Dr. Paul Cartier, the association medical director and Mr. Maurice La Chance, the air hygienist. It is considered significant that they sample the air by the impinger technique as is standard in the United States rather than by thermal precipitators as are used in England. To take samples in mines and inaccessible areas, they prefer the midget impinger, but equivalent counts are obtained with the large and midget impingers.

They use the Mine Safety Appliance micro-projector for counting at a magnification of 1000 rather than the 125X as used here. However, since their greater magnification is obtained in the eyepiece and projection system, and both we and they use a 16 mm 10X objective, the same size particles will be detected and equivalent counts obtained. They have proved this experimentally by comparing dust counts with Johns-Manville who count at the lower magnification. The advantage of the higher magnification is that one can readily see the size and shape of the particles and distinguish between particles of rock and asbestos fibers. Their dust count report lists both the total number of particles regardless of size and the number of fibers above 10 microns in length. It was also reported that less than 10% of the particles

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found were actually fibers, the balance being rock. Also they said that, as expected, the percentage of fiber increased the farther one samples along the mill production line; that is, air in the mine and around the primary crushers contains a lower per cent of fibers than air around the final screening and blending or the packaging operations. The mills are quite dusty according to our standards with total dust counts up to 20 million per cuft., of which less than 10% or 2 million per cuft. would be fibers.

A realistic standard for safe dust concentration was discussed. Dr. Cartier thought a count of total dust particles was of no significance, but felt standards should be based on the concentration of fibers. He thought a concentration of 1½ million fibers per cuft. was a realistic limit.

Dr. Cartier stated that it has been reported the fibers causing asbestosis were those above 10 microns in length. However, he stated that post-mortem biopsies of lungs in many cases showed fibers less than 5 microns long. This was especially true where the person did not have an advanced case of asbestosis but only a mild or incipient case which did not show on x-ray examination.

Dr. Cartier could offer no explanation but he has found no cases of asbestosis among miners, but only in persons working in the mills.

A slide demonstrating the counting of dust particles using the projector was seen. The difference between dust and fibers was apparent. It is recommended that the projection technique for counting dust and fibers be considered for use here. The projector, and required lenses, would cost approximately $500.00.

It was stated the Hartford Insurance reports their dust counts as total dust counts and amount of fiber but they did not know how their counts were made.

Thursday was spent at the Johns-Manville mill and mine at Asbestos which were very interesting and informative. Especially impressive was the ventilation system utilising 2½ million CFM of air.

The writer spent a portion of this day discussing testing of asbestos with Mr. Gaylord Brink of the Asbestos Corporation. He wanted information on the surface area measurements as they were considering adding this equipment to their laboratory. The desired information was provided with the promise to send a sketch and description of the equipment used here. It was stated our and the Rigden apparatus would both rate fibers the same although the numerical value will differ by a constant factor because of the size of the sample and experimental procedure.