



Inter Office

Engineering and Research Staff

August 24, 1977

Memo to File

Subject: Visit to Johns-Manville's Jeffrey Mine,
Asbestos, Quebec on August 4-5, 1977

In Attendance

Johns-Manville - Robin D. Mallory, Supervisor, Technical Sales Service
Joe McCarthy, Sales Manager
Merton D. Webb, Manager, Engineering and Technical Services
Mike Williams, Manager, Production Control
Numerous production personnel

Ford - A. E. Anderson, Engineering and Research Staff
D. P. Cratty, Materials Strategy
R. K. Miller, NAAO Material Planning
M. H. Weintraub, Engineering and Research Staff
C. B. Zelek, Vehicle Materials Planning

Ford visited Johns-Manville's (J-M's) mine to review controls implemented to comply with Canadian asbestos laws of 5 fibers/cc (U.S. standards are 2 fibers/cc). This visit concluded a series of meetings and plant tours with suppliers of asbestos products designed to provide background necessary to evaluate Ford's need to develop non-asbestos brakes, clutches, gaskets, and transmission friction plates. A recommendation paper will be issued in September.

This communication will comment on the mining and production operations and the apparent effectiveness of J-M's efforts to control airborne asbestos:

General

Employment: 2,500 people, 6-day week, 3 shifts
1976 Sales: \$130 million
Earnings: \$30 million before tax
Open Pit Mine: Approximately 1-1/4 miles across, 1,100 feet deep.
Mine sides are sloped at approximately 30° with numerous spiral roads and "benches" providing access and work areas for trucks and shovels.

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General (cont.)

- Finished Product: 700,000 tons in 1976. Production projected for 1977 600,000 tons. Output in 1976 was increased due to customers increasing inventories and strikes at competing companies. J-M produced at maximum capacity during 1976 and had to allocate its product.
- Production Facilities: Two 12-story mills with combined floor space of approximately 2.2 million square feet.
- Ore Moving Equipment: 12 power shovels with 15 yard scoops. 60-100 ton and 4-200 ton capacity trucks costing about \$500,000 and \$1 million (each), respectively. The trucks are powered by 1200 HP diesel engines which power 2-450 HP electric motors on the rear wheels.
- Nationalization: Agreement reached with Quebec Provincial Premier Levesque to permit J-M to continue operations. J-M agreed to invest \$77 million over five years to expand mine and improve environmental controls.

As part of the nationalization discussion, J-M protested the increase in tax rate from 50% to 64%. Its mine taxes in Newfoundland are substantially lower. Quebec taxes for mineral extracting operations are higher than for other industries. Quebec reportedly is interested in having its asbestos processed into finished or semi-finished products within Quebec, and may offer tax incentives to achieve this.

J-M is exploring the potential for chrysotile asbestos mining in the Sudan. However it would be five years before production, should they decide to develop this source.

Background

The Jeffrey Mine commenced operations in 1878. It operated as a surface mine into the late 1930's. Locomotives pulled ore-carrying railcars out of the pits. Underground mining replaced open-pit mining in the late 1930's. Open-pit mining started again in 1955 using large earth-moving trucks developed for St. Lawrence Seaway construction.

The open-pit is being expanded and will increase in width approximately 1/4 mile in the next 2-3 years. This expansion will allow the mine to increase in depth to about 1,500 feet in the early 1990's when additional expansion will be necessary.

The 1/2 mile wide core of prime asbestos ore at the center of the pit continues downward for a minimum of 500 feet more and is probably much deeper.

Mining Operation

Mobile drill platforms drill 6 inch holes for explosives. Blasting is controlled to limit dust and is performed twice each week.

Forty million tons of ore and overburden (rock and earth without recoverable asbestos) are mined each year. Thirty million tons of overburden is dumped nearby. Ten million tons of ore are processed. About 6% of this ore is processed into asbestos fiber.

Production

Trucks carry the ore to a gyrator crusher. The crusher has a 3,000 ton/hour capacity and is operating at between 1,500 to 2,000 ton/hour. The ore is reduced to a maximum of 8 inches in diameter and moved by conveyers to secondary crushers and dryers.

The ore is dried in 800°F ovens. Asbestos fiber is then removed from the ore through eight successive crushing and air floatation operations. The longer and more crudy (larger asbestos bundle diameter) fiber is released in the earlier stages of processing. Different grades of asbestos are produced by blending fiber from different stages of operation. More open fiber grades, those with smaller fiber bundle diameters, are produced by mechanical re-processing of the more crudy fibers. J-M markets approximately 90 grades of asbestos. The longest fiber grades sell for about \$500/ton, the shortest for about \$120/ton.

The newer of the two processing mills (700,000 square feet) was constructed in 1973 for \$75 million. This mill is remotely operated from a control room that permits either computer or manual control. A schematic of the total operation is outlined on a 20 x 40 foot wall with colored lights identifying equipment in operation. Production is controlled by a seven man shift - including supervision.

The older mill (1,500,000 square foot), constructed in 1954, has been updated to include a central process control room with manually operated remote controls. It is run by a work force of 250 per shift. This mill completes the processing of asbestos, after initial processing by the newer mill, and packages the fiber for shipment. Most of the workers are in the packaging and shipping operations, the 100 pound bales are packaged in either polyethylene or paper containers and are automatically palletized.

Control of Airborne Asbestos Fiber

All equipment operating in the pit is air conditioned with filtration systems to remove dust (although we observed truck drivers in the pits with their windows opened). Drills are shielded with vacuum systems to control dust. No dust was visible when we observed the drilling. Roads in the pit area are watered to control dust.

The gyrocrusher operator and production workers in the newer mill are in air conditioned and filtered rooms. Processing equipment and conveyers in the older mill are shielded and connected to low pressure ducts such that air leakage is into the equipment. This minimizes airborne fiber emissions. Only maintenance and inspection workers are needed in this area.

J-M monitors asbestos dust levels at 110 different locations and posts results on bulletin boards. A sample of 37 readings identified 26 locations below 1 fiber/cc. Most other readings were clustered at 3 fibers/cc, with a few higher counts (9 at the underground conveyer and 13 at a closed maintenance chute). Fiber counts were low in those areas where workers were subject to continuous exposure (primarily the packaging and shipping departments).

Employees are instructed to vacuum prior to equipment maintenance or repair. However they do not always comply with instructions. Maintenance workers were observed servicing equipment without using their respirators.

The older mill air floatation and dust control system is powered by 30 electric motors of 450 HP each, producing 5-6 million cubic feet of air flow per minute through 90,000 dust filtration bags. These bags collect 30 tons of material each hour. About 20% of this material ends up a product (asbestos floats), with the rest discarded as tailings.

A central vacuum system is regularly used to remove asbestos from floors and external parts of the machines.

Webb told us the maximum airborne exposure level for production employees is 3 fibers/cc. Asbestos exposure for maintenance personnel may appreciably exceed 3 fibers/cc for short periods. Maintenance personnel have respirators.

J-M demonstrated equipment (produced by Bel Tyne Company, England, which sells to Bendix, Raybestos, etc.) which automatically opens asbestos bales and dispenses the asbestos without worker exposure. J-M installed the equipment primarily to demonstrate low asbestos exposure processing to customers.

Employee Health

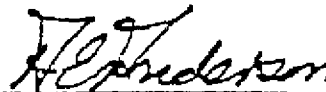
Some 150 J-M employees are receiving asbestos disability payments. This is 6% of the current work force. Employees receive 90% of their wages and are considered disabled with loss of 10% of lung capacity. J-M provides annual physicals for their employees and sends suspect individuals to a Montreal hospital for further examinations.

Lung impairment from asbestos does not develop until as much as 20 years after exposure and since asbestos dust control is fairly recent, it is expected that cases of asbestosis will continue to be identified but at a decreasing rate. Environmental controls at the mine and mills are expected to greatly reduce lung disability.

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Employee Health (cont.)

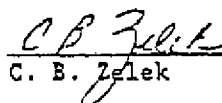
J-M commitment to spend \$77 million over the next five years to expand operations and improve the work environment indicates their confidence in resolving asbestos issues. The Canadian Government is not expected to impose regulations which the asbestos industry cannot meet with existing technology. Asbestos represents 16-17% of Canadian exports.



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