

Asbestos and Health Presentation

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Fibre Handling Systems

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ASBESTOS & HEALTH PRESENTATION

BY

N. W. Hendry

My subject is Asbestos Fiber Handling. In addition, I will show you some of the things we have done and are doing at Jeffrey Mine in this regard.

By way of introduction and since I will be speaking of the Jeffrey Mine, here are some of the major features:

Slide 1: The Jeffrey Mine is the largest producer of asbestos in the world, with annual production in excess of 650,000 tons annually. It is located approximately 100 miles east of Montreal in Asbestos, Quebec, Canada.

The Jeffrey open pit is over 1 mile in diameter and 950 ft. deep. For six days a week some 35,000 tons of ore are hauled to the crusher and more than 100,000 tons of waste rock and overburden are hauled to the waste dump.

Slide 2: This is mill 5 with the fiber storage warehouse in the foreground. Mill 5 is 12 stories high and has 20 primary rock processing lines.

Slide 3: This is an overhead view of the 72" Gyratory crusher which is handling at present 35,000 tons of ore daily. This crusher replaced 4 jaw crushers.

Slide 4: This is a view of the upper portion of the concentrator dryer complex. The entire complex is under rigid dust control; note there is no visible emission from the dryer stacks.

As you realize, asbestos fibre is very important to our division. We produce and sell upwards of 775,000 tons annually from our 4 mines. Our objectives are to deliver asbestos fibre to our customers in a form and in a manner in which there is no dust problem and such that the employees of our customers have no actual contact with asbestos. Many of the methods and systems which I plan to describe to you today will accomplish these objectives. We are prepared to work closely with your personnel to assist you in the achievement of these same objectives.

By way of indicating our confidence in the future of asbestos fibre, we have completed an expenditure of 75 million dollars in re-locating and in expanding our mining equipment at the Jeffrey Mine.

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Now let me describe briefly some of the things we have done and are doing relative to fibre handling.

THE BULK TANK CAR

We have, in conjunction with the Ford Motor Co., and Procor in Oakville, Ontario, developed a bulk tank car and we have been shipping short asbestos fibre grades in it on a successful basis over the past 3 years. C.J.M. alone spent approximately $150,000 in the development of the car.

Slide 5: This car will hold 55 to 57 tons of the fibre grade being supplied to Ford; we have 6 bulk tank cars supplying the Ford plant requirements.

Slide 6: This is a schematic of the bulk tank car with a listing of the specifications and working data.

We load the car at the mine by pumping the fiber into the 7 compartments. At the receiving location plant, air is attached to the car to fluidize the fiber and cause it to flow into the storage silos. The contained fibre can be pumped out in 4 hours.

Slide 7: This is a storage silo at Jeffrey Mine with a capacity of 25 tons. A Vibra screw hopper on the bottom is essential to keep the fiber from packing.

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Slide 8: This is a fiber pump in use at Jeffrey Mine to load the car.

There are definite limitations to this system, including:

1. The length and openness of the fibre.
2. The capital investment required - the investment is in the order of $100,000 and on a rule of thumb basis it does not appear practical unless annual usage is in the order of 2000 tons.

Advantages of the bulk system, include:

1. No handling of bags.
2. No contact with fiber by personnel.
3. Lower handling costs.
4. East of monitoring dust levels.

The entire bulk fibre system at Jeffrey is monitered for dust control and fibre counts are maintained under the 5 fibre/C.C. level.

2. IN-PLANT FIBRE HANDLING SYSTEMS

Slide 9: This is a schematic of an in-plant fiber handling system based on equipment developed and tested at Jeffrey Mine. The system includes a bag breaking station and a fiber pump. The fiber is pumped to the mixers or to weight hoppers. The entire system requiring approximately 3,500 cu. of air. The cost of this system would be in the order of $14,500 plus the cost of piping.

Slide 10: We have developed cost estimates for the installation of a bulk fiber system. The figure of $96,000 is a reasonable estimate.

Slide 11: We have talked about a fiber pump, which is a C.J.M. development, but there are other items of equipment on the market which can be used to transport fiber. One such item is the Vanco Blower. This model can move 100 lbs. per minute of GP 7 fiber. We have several such systems at Jeffrey and we are moving fiber 35 ft. vertically and 2000 ft. horizontally with these units, with the entire operation under dust control. There are two models of this Vanco Blower, ranging in price from $2,000 to $3,000.

3. THE AUTOMATIC BAG OPENER

Slide 12: This is an automatic bag opener as developed by the Jeffrey engineers.

Slide 13: The operator places pressure packed bags on the feed conveyor and the bags can be paper, or polyethylene and the machine cuts the bag, automatically dumps the fiber into a chute and deposits the bag at the far end.

Slide 14: This part is the bag disposal section. A bag baler is under development to automatically bale the empty bags.

Slide 15: Here you can see the detail of the dumping mechanism. The contents of the bag are dumped into a bin and the empty bag is carried to a disposal station.

Dust control requires 800 C.F.M. of aspirating air and dust counts taken through the complete cycle were less than 2 fibers/ C.C.

The cost of the machine ranges from $9,900 to $12,500 depending on the various controls specified.

Fairmount Engineering, Inc. of Hackettstown, New Jersey has developed a bag opener which appears to have merit, the quoted price is $8,500.

4. IN-PLANT HANDLING SYSTEM

Slide 16: This is a fiber handling system employing the bag opener. The fiber feeds to a Vanco blower. The capacity of this system would be approximately 10 tons per hour.

Our estimated cost of this system installed in a plant is $29,000 and that would include a bag baler.

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5. FIBER PACKAGING

Slide 17: Here are our 3 standard types of pressure packed bags being used to package fiber in the domestic market.

1. Standard Kraft multiwall paper.
2. 6 mil polyethylene film.
3. Pulpable Kraft paper multiwall bag.

This slide illustrates a very important concept in fiber handling. For example, the pulpable bag was developed for use in the asbestos paper industry so that bag and contents could be dumped into the Hydropulper or vat, thereby eliminating the need to have a man open the bag. In the same way, the polyethylene bag is used in the asphalt paving industry and in limited cases, in the floor tile industry. Again the bag and contents are dumped into the pug mill or mixer.

Unfortunately, this concept is limited to suitable materials from which a bag can be constructed, as well as the compatability of the bag composition with the product formulation.

6. UNITIZATION

Slide 18: Here we have a 1-ton unit consisting of 45 pressure packed bags. The unit can be shipped on a cardboard deck sheet or a wooden pallet and the bags can be glued locked. Similar units of one or two tons can be shipped if required.

Slide 19: Shows the same unit covered by shrink polyethylene; we have the equipment at Jeffrey to shrink poly film if our customers request it.

Unitized shipments of asbestos fiber in bags glue locked on wooden pallets, with or without shrink poly, suffer less damage and undergo less shifting in a car than any other method.

7. THE ASSIGNED CAR

In seeking added measures to insure improved condition of arrival of asbestos in bags, we have developed the "assigned car" plan. Over the past 18 months approximately 450 cars, each 40 ft. long with double doors have been in assigned service to J.M. plants in the United States.

Under this concept, we unitize and glue lock the pressure packed bags on wooden pallets and employ inflatable dunnage to stabilize the load.

Slide 20: This is an assigned car loaded with bagged units, on wooden pallets with inflatable dunnage.

Slide 21: Here you can see the inflatable dunnage in more detail; there are two bags in each car.

Slide 22: Here are the wooden pallets in more detail. They are heavy duty, double faced, four way entry style, hardwood pallets.

Our experience over the period of 18 months has been excellent, whereby the condition of arrival of the asbestos shipments has been greatly improved over previous standards.

A limited number of these assigned cars fully equipped with inflatable dunnage bags and pallets are available for test shipments. If after receiving a trial shipment you decide to accept this new concept, we estimate it will take approximately 6 months to acquire the necessary cars and dunnage.

Our experimental work on improved asbestos fibre handling systems is continuing in two directions.

8. HIGH DENSITY BLOCKS

Slide 23: Shows a compressed block of fiber measuring 9" x 12" x 16" with a density of 100 lbs./cu. ft. For comparison, is a standard pressure packed bag of fiber having a density of 50 lbs./cu. ft.

The blocks are dust free and our evaluation work to-date with a large paper manufacturer is most encouraging.

Slide 24: This is a 1-ton of compressed asbestos blocks on a wooden pallet and covered by shrink poly.

Slide 25: Here for comparison, are an equal weight of pressure packed bags and compressed blocks. Note the difference in cubic content.

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In addition, we have developed a compressed paper pallet which is under evaluation for asbestos in paper use.

We have engineered and built a packer to produce compressed blocks but more time will be required before blocks can be termed a production item.

9. PELLETIZED FIBRE

Slide 26: Here you see 100 lbs. of pellets loose, the same weight of pellets in a paper bag and for comparison a standard bag containing 100 lb. of pressure packed fiber.

We have a Sprout Waldron Pelletizing Machine under evaluation at Jeffrey Mine and have successfully produced pellets with GP 7 fiber grades using water as a binder. Pellets have a loose density of 65 lbs./cu.ft. and they lend themselves admirably to shipment in closed hopper cars or in bags or in other types of containers.

They are largely dust free.

In conclusion, I have outlined the work we have done and are doing in the asbestos fibre division to meet our objective of delivering asbestos fibre to our customers in a form and in a manner in which there is no dust problem and such that you will have no problem in meeting the OSHA regulations as these relate to asbestos.

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We will be pleased to work closely with any of your personnel in the development of a fiber handling system that fits yours particular requirements.

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